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IMPERIAL MYCOLOGICAL INSTITUTE 15 JUNE 1942

Vol. XLIII. No. 3 MARCH 5th, 1942 Price 6d.

Special Articles This Month

Apple and Pear Acquisition
Canned and Dried Fruit Notes
Citrus Culture
Currant Investigation
Drying and Processing Tree Fruits
Manuring Orchard, Grove and Vineyard
Murrumbidgee Irrigation Areas
Reports from Goulburn Valley
Science in Fruitgrowing
South Australian News & Notes
Tasmanian News and Notes
Vegetable Growing

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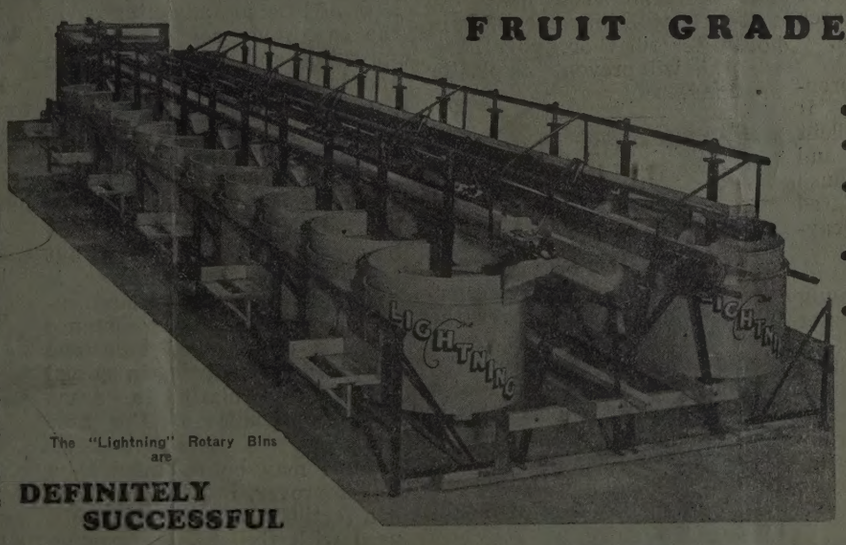

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Extract from "BETTER FRUIT," by Dr. R. L. Webster, Entomologist, State College of Washington, Pullman: CODLING MOTH COVER SPRAYS—"Ever since the imposition of an arsenic tolerance in 1926, and even before that time, investigators have been testing other materials which may be used in place of lead arsenate. Following all these intensive and extensive investigations lead arsenate appears to have certain inherent qualities which place this material foremost as an insecticide for codling moth control."

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YOUNG FARMERS

Club Activities

The Victorian Young Farmers' Clubs Association announces that entries for the Goulburn Valley Young Farmers' Club competition for which a shield has been provided by Mr. J. G. B. McDonald, M.L.A., will close on March 31.

As club interests in this area are associated with a wide range of projects, a club will be eligible to compete with any major project, provided such project is in harmony with primary production in the Goulburn Valley district.

:: :: ::

The Ballendella Young Farmers' Club will carry on with pasture improvement. This year has opened with an excellent growth of the perennial grasses and clovers. It is proposed to extend the vegetable garden in order to carry out more in detail the Premier's call "to dig for victory." So successful was the plot of onions for seed for Great Britain that a larger area will be sown down in onions.

:: :: ::

At Nanneella South the perennial plots are in good heart. It is hoped to harvest an excellent crop of carrots, parsnips and other root vegetables because the members have accumulated a plentiful supply of well-decayed manure.

:: :: ::

The enrolment in Young Farmer schools in the Rochester district has been augmented by the arrival of evacuees voluntarily shifted from metropolitan schools. This is noted also in rural schools in the districts which are featuring pasture improvement as the rural science course.

:: :: ::

Preliminary steps have been taken in organising the competition for the second year of the William Dunstone Shield for pasture studies in the Rochester district. The teachers at the Nanneella district, Bamawm district and Ballendella and Tennyson schools have been interviewed. A meeting of teachers will be held on March 14, at the office of the Rochester Agricultural Society. One suggested alteration is that more points be given for the knowledge of the young people rather than for the plots.

HOME NOTES.

Aching Feet.

To relieve tired and aching feet, place them alternately in a basin of hot, then cold, water. Continue this treatment for a few minutes, then dry well and rub over with methylated spirits. Sprinkle a little boracic acid between the toes before putting on the stockings. This gives wonderful relief.

NAILS IN PLASTER.

Before hammering nails into a plaster wall, immerse them in hot water till thoroughly heated. This will prevent the plaster breaking.

HOME-MADE FLOOR POLISH.

Put into a pint and a half bottle of methylated spirits 2 oz. of resin and 2 oz. of shellac. Shake well, and leave overnight. Next day rub over the floors with a soft rag or brush dipped in the above mixture, doing only a little floor space at a time, as it dries at once, this is a great boon as one cannot always shut a room up while the varnish dries, and with this one can walk on the floor straight away.

COFFEE JUNKET.

For coffee junket heat the milk with coffee essence until blood heat, stir in sugar to taste and then the rennet. Set in tall glasses and finish with a dab of whipped cream or a cherry.

The Value of Lime

BURNT LIME RECOMMENDED FOR INTENSE CULTURE.

AUTUMN APPLICATION.

THE IMPORTANCE OF LIME in its varying forms is dealt with by Mr. W. C. Robertson, Agricultural Chemist, in the "Vic. Journal of Agriculture." Thus:—Many hold that some value should be given to the oxide and hydrate forms when applied to the soil, owing to the physical improvement and chemical reactions generated during the transition stage from oxide to the carbonate. This is probably correct, but will depend upon the amount of lime applied, i.e., the effects in the case of light dressings are slight, but become more pronounced in heavy applications. Another advantage of the caustic forms is their insecticidal value. Apart from cheapness, the carbonate form has additional advantages in the ease and convenience of spreading and safety of storage and handling.

It will be gathered from the foregoing that that problem of the best form of agricultural lime to buy is not an easy one, and no general recommendation can be made. Each case should be considered on its merits, but probably the best answer is **"burnt lime for arable land, intense culture and long-distance haulage, and ground limestone for pasture (excepting in special cases) particularly in areas within 300 miles of the lime works."**

Lime may be regarded as a soil improver, but in no case is it a fertilizer, and should not be used with the object of saving the superphosphate bill. **Excellent results often follow "liming" in the autumn and superphosphate in the spring.** Superphosphate should always follow lime, and the practice of applying superphosphate in the autumn and lime in the spring is not recommended.

Lime Sales Increasing.

The use of lime on the farm soils of Victoria is definitely increasing. Part of this increase is due, no doubt, to existing circumstances. Lime in the burnt form has always been used extensively and periodically by the market gardener and floriculturist, and in many cases by the orchardist and those practising other branches of intense culture. However, the increase in recent years has been mainly applied to pasture land following acidity tests. Many graziers on large holdings are apparently becoming interested in liming, and it can be assumed that not all the interest is due to the activities of the salesman.

VALUE OF COW MANURE.

It is computed by the Victorian Department of Agriculture, that on a 30-cow dairy farm the yearly production of fertilizer in the form of cow manure is equivalent to—

4½ tons of sulphate of potash.
2½ tons of superphosphate.
9 tons of sulphate of ammonia.

The value of this material F.O.R. Melbourne would now be approximately £250.

The barmaid was a flirt, and when the corporal went out to see the time, she pursed her lips invitingly and leaned over the bar towards the shy young private.

Putting her face against his, she whispered: "Now's your chance, sweetheart."

The private looked around the empty room.

"So it is," he remarked; and promptly drank the corporal's beer.

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News of the Month

ORGANISING THE FRUIT INDUSTRY.

Co-operation Advocated.

Addressing a meeting of co-operative societies in N.S.W. recently , Mr. George Booth, President of the Co-operative Wholesale Society, dealt with the problem of the "Board" system to both producer and consumer. "The whole produce of the State from the producer to the breakfast table," he said, "should be co-operatively marketed." He pointed out that there are 60,000 co-operators organised in N.S.W., and that, allowing for man, wife and two children to each family, there were in N.S.W. a quarter of a million organised consumers belonging to bona fide co-operative societies. The remedy for the surplus Apple problem was co-operative enterprise.

Tracing the history of co-operation in Australia, Mr. Booth asserted that the only difference in the movement here and abroad was our failure to boost it. He emphasised that it had grown from a tin shack to one of the largest trading organisations in N.S.W., despite the attempts to boycott it when it started to manufacture its own goods. To-day it is not merely an industrial movement, but is flourishing in many rural districts. The C.W.S. Board is now a Consumers' and Producers' Board controlled by hard-working men and women, and members have equal power irrespective of the size of the societies they represent.

PERSONAL.

Mr. J. L. Provan, B.Ag.Sc., Senior Horticultural Instructor, Victorian Department of Agriculture, was recently transferred to the School of Horticulture and Primary Agriculture at Burnley, Vic., where he is now the Acting Principal, thus succeeding **Mr. A. W. Jessep,** M.Agr.Sc., who has been appointed Director of the Melbourne Botanic Gardens in place of the late Mr. F. J. Rae.

OBITUARY.

Mr. R. G. Phillips, who was for over 20 years Secretary of the International Apple Association, died recently in U.S.A. after an attack of pneumonia.

The late Mr. Phillips was highly esteemed in all parts of the world where Apples are grown commercially. He guided the affairs of the International Apple Association with ability and fidelity, and his passing is widely mourned.

Mr. J. W. Peart, of Bairnsdale, Vic., passed away on February 15, aged 79 years and four months. He was the husband of the late Mrs. A. E. Peart, and father of George W., Thomas H., Alfred J. (late A.I.F., killed in France, 1918), Eleanor H. (Mrs. L. G. Bree), Dorothy G. (Mrs. W. Wakefield), Annie V. (late Mrs. A. E. King), and Lilla L. Sympathy is extended to the relatives in their sad loss.

NEWS IN BRIEF.

Mottle leaf of citrus can be controlled by spraying trees in Spring with 3 lb. zinc to 100 gallons of water.

Citrus trees affected with Red Scale should be fumigated with hydrocyanic gas: a spraying first with white oil, however, is recommended.

A deputation from N.S.W. Lemon growers, supported by other interests, urged the Minister for Commerce (Mr. Scully) to supply the troops in the Middle East with more Lemon juice instead of so much beer. The Minister promised to take the matter up with service Ministers.

For successful gas storage, the temperature and composition of the atmosphere must be controlled and the fruit should be stored within four days of picking.

U.S.A. statistics show that whereas the Apple was previously the most popular fruit on the basis of per capita consumption, citrus fruits have shown a marked increase in the per capita consumption in recent years and are challenging for first place.

Green Manuring in the Orchard, Citrus Grove and Vineyard

AUTUMN IS SEED SAVING TIME. —— USEFUL HINTS FROM QUEENSLAND.

BY GREEN MANURING, or cover cropping, as it is sometimes termed, is meant the growing of suitable green crops in the orchard to be ploughed or otherwise turned under to rot down and form humus, states Mr. H. Barnes, Director of Fruit Culture, Queensland Department of Agriculture.

Humus is defined as the product of the decay of organic substances and one of the most important constituents of a fertile soil. It improves the texture and assists in maintaining fertility and the retention of moisture. The orchardist, therefore, who does not appreciate the value of supplying his land continually with humus, soon finds that his trees return him poorer results each year, whilst his land becomes hard, baked, and dry.

Farmyard manure is the ideal manner of supplying humus to a soil but, unfortunately, this is not always available in sufficient quantity. Green manures are therefore called upon to provide the deficiency, and by their growth they also have the advantage of reducing soil erosion. Further, their incorporation with the soil enriches it by the addition of certain essential plant foods, such as carbon, oxygen, and hydrogen, which are absorbed from the air. The compounds that result from the crop decay increase the absorptive power of the soil and promote aeration, drainage, and granulation—conditions of importance where successful plant growth is concerned. If the crop grown is a legume, the store of nitrogen is also increased by the absorption of this element from the air.

The districts in which irrigation facilities are available, or where Autumn and late rains are seasonable, will be best served by planting late Autumn and Winter green manure crops. Such crops, however, should not be permitted to grow over into the active Spring period.

In newly planted orchards, trees up to four or five years of age seldom occupy more than a relatively small proportion of the total area upon which they have been planted. This factor may be early utilised to build up a reserve of vegetable matter in the soil by thickly inter-planting cover crops up to four or five years. The tree roots do not extend far from the trunk and do not take up the amount of space occupied by those of older established trees. Thus cultivation may be confined to the immediate vicinity of the trees; and by far the greater amount of space down the centre of the tree rows may be occupied in growing both Summer and Winter green crops. A strip along each side of the tree is thus being cultivated frequently.

The choice of the particular crop to grow will depend upon the season, the amount of water available, and the length of the growing period.

Both legumes and non-legumes will benefit considerably by the application of 1 or 2 cwt. of superphosphate, and often the addition of similar amounts of ammonium sulphate is advisable, particularly when growing non-leguminous crops.

In regard to the choice of crop to grow, Crotalaria, Maize, Poona Peas, and Black Cow Peas grow well in coastal districts when planted during November or December, according to seasonal conditions.

Under normal conditions these plants will have made satisfactory growth and will have produced a good body of succulent tops for turning under during March and April.

For the Winter green manure crop, Field Peas and Barley, Tick Beans, Mustard, and in some districts Lupins and Vetches have proved satisfactory.

Planted in March, good bodies of material have been ready for turning under in Winter and early Spring. Here again, except perhaps in practically virgin soils, it is most desirable that a suitable fertilizer be used at planting to ensure quick growing and succulent plants.

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—then use the World's Best—

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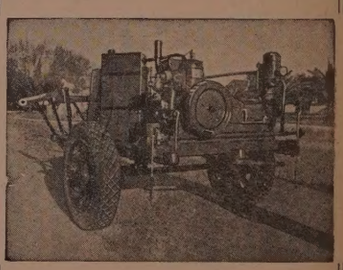

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Science and Fruitgrowing

INTERESTING NEWS AND NOTES FROM WORLD-WIDE SOURCES. NEW FRUIT VARIETIES — ROOT-STOCK STUDIES — WILLIAMS (BARTLETT) PEAR POLLINATION AND STORAGE — ETHYLENE GAS AND PLUM EXPORT — TOXIC EFFECT OF ZINC SULPHATE — PEST CONTROL — WORLD OUTLOOK ON FRUIT INDUSTRY.

(Horticultural Abstracts from the Imperial Bureau of Horticulture.)

MANY ITEMS OF INTEREST to horticulturists are contained in "Horticultural Abstracts," the quarterly publication of the Imperial Bureau of Horticulture, E. Malling, Kent, England. At this Bureau the experts extract information from all parts of the world and put forward this information in a concise manner, and quoting the authorities concerned, so that those interested can pursue enquiries further if so desired. Here are some of these abstracts.

Plant Research in U.S.A. New Fruit Varieties :: Methods of Pest Control.

Of Apples bred by the Geneva (U.S.A.) Experiment Station, Cortland, receives special mention, as also Early McIntosh, Lodi, Orleans, Macoun and Sweet Delicious. Of **Plums,** Stanley shows promise for productiveness and quality. New Cherries produced include Seneca, Gilpeck and Sodus. Some 25 new varieties of **Grape** have been introduced, some already having shown commercial merit. Of **Red Raspberries,** Taylor, Marcy and Newburgh are among the best of the Station's productions. Among **Purple Raspberries,** Sodus and Marion should be noted. Bristol is perhaps foremost among the new **Black Raspberries.** Several new **Strawberries** are coming to the fore, e,g., Catskill, Clermont, Culver and Dresden.

Plant disease control has been directed largely to Apples, Cherries, Peaches, Gooseberries and Raspberries. Pest control has centred round the following problems: Insecticide testing; life history and seasonal development of pests; development of new insecticides; biological control; non-chemical control measures. The chemists are examining the possibilities of synthetic organic compounds, extracts of plants containing toxic principles, petroleum and coal tar as possible sources of insecticides and fungicides. Fruit by-products are being studied. Attention is being paid to methods of processing Apple juice and the development of new fruit juice blends such as Cherry cocktail, Apple-Raspberry juice and a new type of Prune juice. —P. J. Parrott.

The Problem of Better Rootstocks for Fruit Trees.

ROOTSTOCKS now in common use are for Apple, seedlings of French Crab Malus domestica; for Pear, seedlings of French Pear Pyrus communis, and to lesser degree of the Oriental Pears P. ussuriensis, P. calleryana and P. serotina; for Cherry, seedlings of mazzard (Prunus avium and mahaleb P. mahaleb); for Plum, seedlings of myrobalan (or Cherry Plum) (Prunus cerasifera) and a few vegetatively produced stocks of marianna; for Peaches, "naturals," i.e., seedlings of Wild Peaches (Prunus persica).

Despite the lack of uniformity inherent in such stocks there is undoubtedly room for improvement in the seed supply by making known crosses between two varieties or lines. Maney, of Iowa, has thus already produced Apple seedling rootstocks remarkable for uniformity and for the vigor of the trees worked on them. A nearly pure line of mazzard has been achieved. Many consider that the future lies with the seedling. Vegetatively produced rootstocks, especially for Apples, have been and are being put to satisfactory tests in the U.S.A. They include not only the Malling range but also some of American origin such as Yerkes' selections.

A phase of the clonal rootstock problem is that which involves clonal material as intermediate stem piece or body stock. Thus in Canada the use of Haas, Hibernal and seedlings of Malus baccata as intermediate tends to greater hardiness. Virginia Crab used similarly in Indiana and in Iowa has also increased hardiness. The range of size afforded by the Malling stocks is large and they have stood up to severe Winters in New York State. Varietal preferences for particular stocks have been shown, but so far no case of real incompatibility with these stocks has been found.—H. B. Tukey.

Studies in the Variation of Nursery Fruit Trees on Vegetatively Raised Rootstocks.

SOME VARIATION will always be found in nursery trees even apart from that due to environment. This may be due to several factors such as differences in age, size and rooting of the rootstock, previous history of the bud or graftwood and differences in the methods of budding or grafting used.

The extent of this variation in worked Apple and Pear trees is examined in the first part of this paper. In the second and third parts experiments designed to show how far small differences in rootstock and scion can influence the tree in the early stages of its existence are described. The work was carried on in a commercial orchard and in the experimental nursery of the East Malling Research Station.

Among the general conclusions reached are the following: Some varieties and trees worked on certain rootstocks vary more than others. All nursery trees tend to vary greatly at the beginning but to level up considerably by the end of the main growth period. The data indicate that so far as clonal rootstocks are concerned a closer grading for size or root development than is now usual in commercial practice will be of little advantage in attaining greater uniformity.

In the observations recorded budded Apple trees were, in general, larger and less variable than grafted Apple trees.

A contributory cause of this may be the fact, noted in other experiments, that clear differences can be seen in results from the use of graft wood taken from the basal as compared with that from the apical end of the shoot.

In **Durondeau Pears** both the position of the bud on the shoot and the age of the trees from which the shoots came did have some effect on the resulting tree, but in **Conference** no such effect was found.

Of budding methods only high snagging seemed likely to influence variation, and then only if the buds were inserted in positions of different aspect (or shade). The removal or not of the wood in the bud shield appeared immaterial, as also, in grafts, the position of the top bud of the scion. In nearly every comparison the larger trees were the less variable in size.—H. B. Cannon, "Journal of Pomology," 1941.

Terminal Shoot Growth of Apple Varieties as Apparently Stimulated by Virginia Crab and Hibernal Intermediate Stocks.

The data reported from Maine Agricultural Experiment Station are from scion growth at least three years old. The differences noted may decrease with age. Both Virginia Crab

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South Australia: George Wills & Co. Ltd., Gilbert House, Gilbert Place, Adelaide.
Western Australia: Gibbs, Bright & Co., 179 St. George's Terrace, Perth.

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SCIENCE AND FRUITGROWING—(Continued).

and Hibernal used as intermediates on seedling stocks invigorated the scion varieties used in this trial, including Baldwin, Delicious, McIntosh, Melba, Red Spy, Richared, Starking, and Wealth.—M. T. Hilborn and H. H. Waring, in Proceedings American Society for Horticultural Science.

Studies With Williams (Bartlett) Pears.

In the first article the authors, after a concise review of the literature on the subject, discuss the behaviour of the Williams Pear at Bathurst, N.S.W., in the years 1928-1934. Self-fertility and cross pollination studies were made. Among other facts established were the following: The natural setting at Bathurst affording only limited cross-pollination gave satisfactory commercial crops. Much seedless fruit was produced and its carriage to maturity depended on season. Williams showed a very low order of self-fertility, viz., an average of one seed from 163 self-pollinations.

Artificial cross-pollination gave nine times the set of all self-fruitfulness results and three times the average natural set. The chief Pears grown in N.S. Wales are cross-fertile with Williams. Winter Cole is particularly suitable. The self-fruitfulness of Williams masks the value of cross-pollination. Interplanting should be carried out.

In the second article results of two seasons' trials are recorded on the effect of seedlessness on composition of fruit. Seed content showed no significant association with either soluble or insoluble solids content. Total sugars showed an increase with seed number. Free reducing sugars showed an increase with increasing seed number. The acidity, expressed as malic acid, showed no significant association with seed number. There was no significant association of nitrogen with seed number. The percentage of ash in the pulp showed a decrease with an increase in seed number.—R. E. P. Dwyer, F. T. Bowman and A. V. Robinson, N.S.W. Dept. of Agriculture.

The Williams Pear and its problems on the Rio Negro. Cold Storage :: Re-working.

The paper discusses: (1) Factors which influence the successful cold storage of Pears on the Rio Negro, Argentine; (2) other problems connected with marketing, drying and topworking surplus trees. The data for (1) were obtained from observations at two large commercial cold stores. Pears picked January 23 and 24, and placed in cold storage on 27th kept for about three months, while those picked on February 6 and 8 and stored on the 9th and 11th kept only one month. Large fruit picked early kept better than small. The reverse was the case with the late harvest. In one establishment the first picking kept best at 4-5 deg. C., and the second at 3-4 deg. C., in the other the best results were obtained at 3-4 deg. C. for the first and 5 deg. C. for the second pickings. Fruit on free stock kept better than that on Quince. Highly colored fruit of the second picking kept twice as long as green fruit picked at the same time. (2) Most of these problems are of purely local interest. It is proposed to deal with the over-production of Williams by topworking surplus trees to other varieties and to this end the frameworking method of Garner and Walker is described and illustrated.—I. P. Grunberg, Buenos Ayres.

S. African Plum Export. Value of Ethylene Gas Ripening.

Much information is given in connection with export conditions, states of maturity for picking, condition on arrival overseas of various deciduous fruits, in a report from the S. African Dept. of Agriculture. This deals in detail with the effect of **ethylene gas treatment in the ripening of Cape Plums, especially Kelsey, Wickson and Gaviote.** Reports from England show that treated Plums have usually arrived highly colored and in excellent flavor and condition, whereas untreateds have been green and unsaleable.

On the other hand there have been some failures, treated fruit being found overripe and bladdery, on arrival. Further study of the treatment in regard to these Plums should, if successful, as is likely, make a very big difference to their commercial future in the export market.

Zinc Sulphate on Plants. Toxic to Beans.

Ten plants of dwarf French beans were grown in culture solutions containing each of the following concentrations of zinc sulphate: 200, 100, 50, 5 and 1 p.p.m., and were compared with a control series containing no zinc. There was some difficulty in keeping the zinc concentration constant, since phosphate introduced in any form affected it, but the data obtained were sufficient to show that zinc sulphate is definitely toxic to plants. Its presence on the dumps of disused lead mines in Cardiganshire therefore would account for the failure of attempts to establish vegetation on these dumps (for a purpose which is described). Any phosphate in the soil would combine with the zinc and be unavailable for plant growth. It is suggested that liberal phosphate dress-

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SCIENCE & FRUITGROWING—(Ctd.).

ings on the dumps might precipitate the zinc while leaving enough phosphate to encourage plant growth.—G. N. Davies.

Wireworms and Their Control on Irrigated Lands.

The methods of control dealt with are trapping and baiting, the use of carbon disulphide, crude naphthalene, flooding in hot weather when the soil temperature does not fall below 70 deg. F. at a depth of 6 inches, lrying the soil once every 5 to 6 years, Summer ploughing to kill pupae, rotation of crops. The time of planting various susceptible crops to avoid damage is also briefly discussed. — M. C. Lane, U.S. Dept. of Agriculture.

Infiltration and Orchard Soils.

The importance is stressed of protecting the orchard soil surface with adequate vegetation or ample organic mulch in order to conserve soil moisture especially in the drier districts. Orchards under sod have automatically maintained favorable soil conditions suitable to the rapid infiltration of moisture without loss of soil, in marked contrast to conditions existing in cultivated orchards. — R. H. Sudds, W. Virginia Hort. Soc.

The World Outlook in Relation to the Fruit Industry.

A most interesting account of the expansion and shrinkage of world markets for fruit from deciduous and citrus orchards in the last 20 years is given by Mr. F. A. Motz. It is thought that the restrictive controls operating on the European markets before the war, which have now become much stronger, are bound to continue for some time after peace has been declared. Alleviation of producers' difficulties may lie in elimination of marginal produce, of the setting of very high standard for fruit and in the development of by-products. It is noted that Germany hopes to get enough fruit produced in the Balkan countries, despite the rather primitive state of their agriculture, to offset the cutting off of supplies from overseas.

FORTHCOMING SHOWS.

Shows are scheduled for fruit districts as follow:—

New South Wales: 1942.

Tumut—March 3 and 4.
Coff's Harbor—March 10 and 11.
Crookwell—March 12-14.
Goulburn—March 19-21.
Camden—March 19-21.
Bathurst—April 14-16.
Grafton—April 22, 23, 24.

Secretaries of the Show Committees in the several States are invited to send in particulars of the coming shows in their districts.

CITRUS CULTURE

PLANTING HINTS — SUITABLE STOCKS — FERTILIZERS AND COVER CROPS — PEST AND DISEASE CONTROL — SPRAY WITH WHITE OIL BEFORE FUMIGATING FOR RED SCALE — VALUE OF ORGANISED MARKETING.

By C. Plush, Berri, South Australia.

(A Paper Read before the Berri Branch of the S. Aust. Bureau of Agriculture.)

THE MOST SUITABLE land for citrus trees in the Murray Valley of South Australia is a light, deep sand, similar to the Winkie Ridge classed as Murray sand. This soil, although not rich, is deep, well drained, and free from harmful alkali. This is most important, as citrus trees must have adequate drainage. Frost may be useful early in the ripening period to hasten coloring, but in Spring the young Oranges are as susceptible as other fruits to the ravages of frost.

In planting a grove, attention must be directed to the **watering system** with the greatest of care. The furrow system is the only one available locally, and is the most successful one. This method, however, necessitates the use of short rows, as in the case of long rows the trees at the ends must be badly irrigated —one too long and the other too short. The planting must follow the lay of the land, and wherever possible provision should be made for watering from two directions. The fall in the direction of watering should be from 4 in. to 6 in. per chain.

The **distance between trees** is commonly 20 ft. or 24 ft. With the former measure, 100 trees can be planted to the acre, as against 70 for the latter. The only advantage of the latter measure is that even after the trees have reached maturity there is room to work the land In the case of the 20 ft. planting, cultivation is not impeded until after 20 years of good growth. There is something to be said for planting trees 18 ft. by 25 ft., which allows a wider row for irrigation and more trees per acre, which is a great help in the early years of production.

Local growers do not have the difficulties associated with watering from wells where the water is apt to contain certain minerals in solution. Nevertheless, orchardists must be careful that the Murray, during drought years, is not polluted with drainage and seepage waters and rendered too saline. The continual additions of salt to the land too alkaline for horticulture. Citrus trees are very susceptible to alkali.

The disease Scaly Bark (Psorosis) is now fairly common in some groves, but in future plantings it can be avoided. This disease is caused by a virus, and, once established, there is no known cure, although scraping the effected areas and painting are helpful. In new plantings, therefore, **the grower must be certain that both the stock and scion used by the nurserymen come from mature trees free from Scaly Bark.** The disease does not appear until maturity is reached, and so is not detectable in young trees.

Tests are being carried out at Mildura to discover the **most suitable stocks** for citrus. These tests are in progress and so no definite conclusions can be given, but it appears that in sandy soils the most successful stocks for Oranges are (1) Sweet Orange, (2) Citronelle. A good stock, however, is not good unless the scion is from a healthy, vigorous parent tree, with good fruit-bearing habits.

As the young trees grow, there is little pruning required, as they take up their natural shape without interference. Occasionally, however, it is necessary to cut off the young watershoots that arise. If these are caught while sufficiently young, it is easier to break these off that cut them. In mature trees, especially old ones, it is necessary to prune out dead limbs and occasionally trim off all branches that brush the ground. If left, these will mark the fruit and make picking more difficult.

Fertilizers and Cover Crops.

In these sandy soils it is necessary to use plenty of fertilizer, both green manure and artificial. Potash and phosphate are generally regarded as of minor importance, and by some as unessential, but I continue to apply super. and sulphate of potash in dressings of approximately half the quantity of nitrogen used. I have used both nitrate of soda and sulphate of ammonia for the nitrogen supply, but as the latter is cheaper and contains more nitrogen, 20.6 per cent. to 16.5 per cent., I generally use sulphate of ammonia.

The nitrogen in this fertilizer is not quite so readily available to the plant as is the nitrate. The artificial fertilizers are applied in two dressings, two-thirds in Spring and one-third in Autumn.

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most important as a breeding ground for the bacteria that render sulphate of ammonia and decaying organic matter available to the plant as the assimilable nitrate.

The crop most suitable for a cover crop is that which produces the greatest bulk to be turned in. A successful crop of **legumes**, such as Peas or Beans, has the added advantage of supplying a little nitrogen to the soil. Some types of **Mustard** grown at the Berri Government Orchard give the greatest bulk as cover crops. As most of our cover crops are Winter growing plants, their growth is apt to hinder picking operations, and picking will hinder the growth of the cover crop, and also rob the trees of moisture which they require to ripen their crop. To rectify this, the practice of adding stable manure, straw, cocky chaff, lucerne, hay, etc., in early Summer is the only alternative. A dressing of this type acts as a mulch, and so cools the soil and reduces the loss of water from it.

The cultural practice in this district is to make new furrows for each irrigation and cultivate again as soon as possible after watering, with the intention of conserving moisture by this fallow principle. In California, however, there is a tendency to irrigate with semi-permanent furrows, cultivating only when it is necessary to control weed growth. They claim that the advantage of a fallow is very slight, as the moisture conserved is trifling. The disadvantage of over-cultivation is that the organic matter is burnt out, and the bright sunlight, especially the ultra violet rays, kill the bacteria that are so helpful. This practice would appear to necessitate more frequent irrigations than we, with our community pumping system, can have.

Pests and Diseases.

For years we were troubled by **Mottle Leaf**, and a consequent weakening of the trees in certain patches of our groves. It can be conquered by spraying the trees in Spring with 3 lb. of zinc to 100 gall. of water. The results of a spraying with zinc are a clear indication of the importance of the minor elements.

So far, growers have been very fortunate in being able to maintain an almost complete freedom from serious pests and diseases, due mainly to the good work done by the Department of Agriculture. The most serious pest, at present under control, is **Red Scale.**

Whenever this appears, steps must be taken immediately to have the affected trees fumigated with hydrocyanic gas.

The best method to do this is to spray first with white oil.

This will kill and loosen most of the scale, which can, in about 3 weeks, be exterminated by fumigation. Oranges also marked with soot from Brown Scale are now banned on the Melbourne market, therefore it is important to keep the groves clean. Fortunately, however, this scale is not very serious here, and it appears to be kept in check by the climate. Cottony Cushion Scale is also kept in check by Lady-Bird insects.

Granulation or crystallisation of the juice sacs in Valencia Oranges is a complaint in young groves. As the cause is not definitely known, there is no preventive. This condition develops mainly after picking. Oranges showing only little granulation on picking may have nearly 40 per cent. granulation on storing for 2 or 3 weeks. Granulation occurs only late in the season, and so may be avoided by earlier picking.

To ensure that fruit arrives on the market in good condition it is advisable to use great care in picking, carting, and handling. The pickers should use a cotton glove and snip the stem of the Orange about 1 in. from the fruit, then use a second cut to remove the remainder of the stem. Always use a blunt-nose Orange clipper and so do not harm the skin of the fruit. The picking bag used should not be too large (½ bush.), and made of smooth, strong canvas. This should have easily-manipulated catches so the fruit may be handled carefully when transferring from bag to box. Picking boxes should also be kept clean and free from protruding nails and splinters.

Uncontrolled Planting and Organised Marketing.

In this past season, since exporting was limited mainly to New Zealand, the Australian market was scarcely able to cope with the crops at payable prices. Quite obviously the market can be extended by increasing publicity of the health-giving qualities of Oranges, Lemons, and Grapefruit, and also by efforts to supply the larger country towns. The increased popularity of Oranges, etc., can only take place slowly, however, and it appears that present planting will suffice for some time. With organised marketing to control the now haphazard railing of fruit to the market from some of the States, better returns may be realised by our agents, who can then count on maintaining stocks suitable to the demand.

The repatriation schemes that arise after this war are likely to include increased horticulture. If this is so, it must be controlled to avoid a serious over-production and slump. In the citrus industry, planting must be limited in quantity, and what is done must take place in the regions best suited to the economic production of citrus and to the market. We do not want a repetition of the position after the last war, when we waited years for our blocks to come into production, only to find we had no markets.

Drying and Processing Tree Fruits

PEACHES — PEARS — NECTARINES — APPLES — APRICOTS — PRUNES — TREATMENT PRIOR TO DRYING — SULPHURING — CURING.

The dense fume or running fume method consists of keeping the sulphur burning, with the vents open, during the full period; adequate sulphuring under these conditions is obtained in four to six hours. In the socalled closed chamber, if there is sufficient leakage to maintain burning, similar results are obtained, though it may be necessary to extend the period of sulphuring up to eight or ten hours. The practice of leaving the fruit in the chamber over-night is not recommended. The longer sulphuring periods apply to fruit designed for the moist pack. High percentages of sulphur dioxide in the fruit is obtained either by dense fumes for the required period, or by prolonging the period of sulphuring.

d. **Handling the Fruit.** It is desirable to sulphur as quickly as possible after cutting, preferably within two hours. (Hence the desirability, under (b), of a number of small chambers.) The trays should be kept clean, to prevent discoloration.

Fruit should be stacked from the bottom upwards in the order in which it is cut. Freshly cut fruit absorbs sulphur dioxide more readily than that cut some time prior to sulphuring, and this arrangement of stacking allows the driest fruit to be in contact with the maximum density of warm sulphur fumes, thus tending to uniform sulphuring results.

On completion of sulphuring, the fruit should be exposed to the sun as quickly as possible, as rapid preliminary drying is essential to avoid excessive loss of sulphur dioxide. Inferior fruit discarded from the main pack should be sulphured heavily.

e. **Characteristics of Sulphured Fruit.** The filling of the cups with juice is not necessarily a reliable indication of satisfactory sulphuring, as fruit in this condition may frequently be over sulphured.

Correctly sulphured fruit is usually characterised by a firm core, an easily detachable skin, with some exudation of juice into the cup, and a general evenness of color of the cut surface. The fruit is usually over-sulphured if the whole of the flesh has become softened, and if the cups have overflowed with juice.

f. **Resulphuring after Wet and Humid Weather.** Changes in weather sometimes make it necessary to hold the fruit in stacks after sulphuring to prevent wetting by rain, and may also result in a slow initial drying rate. These conditions result in an unduly large loss of sulphur dioxide, and frequently the percentage retained is insufficient to maintain quality. Resulphuring as the weather clears is necessary in such cases — otherwise the percentages of dark fruit, and fruit insufficiently sulphured for the moist pack, are excessive.

3. Peaches, Nectarines and Pears.

THE GENERAL PROCEDURE for sulphuring Peaches, Nectarines and Pears is similar to that for Apricots, except that these fruits absorb sulphur dioxide more slowly than Apricots, and do not retain it so well. Cases of oversulphured Peaches and Nectarines are seldom noted at the packed stage; a longer period in the sulphur chamber is essential, and moist packing is not desirable. Pears absorb fumes slowly and cases of oversulphuring are extremely rare. Double sulphuring, to extend the period in the chamber up to thirty hours, is frequently practiced. Sulphuring should be continued until the Pears are so soft that they cannot be lifted from the trays. Delivery with insufficient sulphur is the most common cause of deterioration in Pears.

As with other fruits, rapid preliminary sun-drying is essential to avoid excessive loss of sulphur dioxide; however, to prevent discoloration, it is necessary to "stack" the trays after about two days of exposure to the sun, and to complete the drying in these shaded conditions.

4. The Moist Pack for Apricots.

Whereas a few years ago Apricots were packed in a sun-dried condition, it is now common custom to market a "moist" pack, which is preferred on the overseas market and which also has become established at home. The production of a satisfactory moist pack Apricot involves certain processing problems which have not yet been solved by all packing sheds, as experience has shown that some packers have not been entirely successful in producing a satisfactory product which will retain its color on storage. Attention is therefore drawn to the following points which have an important bearing on the question and which must be observed to obtain the best results in moist packing.

a. **Grading.** Further hand grading in the packing shed is invariably required if an attractive and uniform product is to be obtained. Reports from overseas markets stress the necessity for more consistent grading both for color and size. In addition to size-grading, picking out of faulty pieces by hand seems essential.

b. **Moistening.** Moistening is accomplished by immersion in hot or cold dips, or by steaming. The hot dip may consist of water or a solution of sodium or potassium metabisulphite, of common salt or of glycerine. For the usual size of dip tank (60 gallons), 1½ gals, of glycerine or 2 lb. of salt, or up to 5 lb. of metabisulphite have been variously used for a period of immersion of from 10 to 20 seconds. The requisite time of immersion or steaming depends on the condition of the Apricot and can be determined only by trial.

Glycerine is not now recommended, as the benefits are slight and at present it is costly and difficult to obtain.

Hot salt solutions are favored in preference to hot water, though the benefits, if any, are so slight that they are difficult to discern. The metabisulphite dip is established in common use; it has a greater value in retaining sulphur dioxide than either salt or glycerine and apparently an equal value in other respects. Cold dips, either metabisulphite or sulphurous acid solution (1 to 2 per cent. obtained by passing sulphur dioxide through water) have been successful, with periods of immersion of 2 to 3 minutes. Steaming for approximately 20 minutes is also practised by some packers.

After dipping, sulphuring for 2 to 4 hours is recommended, irrespective of the type of dip; resulphuring has been successfully omitted, in some instances, for parcels with a very high initial sulphur content. For thick heavy fruit, the higher range of both immersions in the dip and sulphuring are favored.

On removal from the sulphuring chamber it is best to stir the fruit slightly to prevent settling on the trays.

c. **Moisture Limits.** There is a limit to which the moisture content can be raised consistent with successful keeping qualities during export or storage. This limit is 20 per cent. moisture in Apricots packed in sealed tin-lined containers or in paper-lined boxes for export, and 25 per cent. in Apricots in paper-lined boxes for immediate consumption. The determination of the moisture content of processed fruit should therefore be a regular procedure in a packing shed, it is difficult to see how otherwise the moistening process can be adequately controlled or a uniform product turned out from day to day. Methods of determining moisture are discussed later.

d. **The Sulphur Content.** Undoubtedly the sulphur content is the outstanding factor concerned with the retention of a bright color in moist pack Apricots, which lose sulphur dioxide more quickly than do dry-packed fruit. A number of instances of darkened Apricots have been examined and invariably the sulphur dioxide was only 1 grain per pound or less. There was in fact, a correlation between degree of darkening and sulphur content. It is essential that moist packed Apricots, immediately after processing, should contain **right up to the limit** of 14 grains sulphur dioxide per pound.

In order to ensure that such is the case, two courses are open; either oversulphured dry Apricots should be selected, or resulphuring after processing must be employed. In view of the widespread adoption of moist packing, it is obvious that the latter procedure must generally be followed. The use of a sulphurous acid moistening dip has obviated the necessity for resulphuring in some cases of Apricots with a high initial sulphur content, but prolonged dipping is necessary to obtain a material increase in the sulphur content of the fruit, this prolonged dipping raises the moisture unduly, necessitating further drying.

It is obvious that a knowledge of the sulphur content, both before and after processing is an absolute essential if a uniform and satisfactory product is to be maintained; without such a knowledge, moist packing must be haphazard and accompanied by frequent instances of deterioration and wastage. A "workshop" method for the determination of sulphur dioxide content is described later and this, or other suitable method, should be used to determine the sulphur content before and after moist processing.

e. **Storage.** Moist pack Apricots in boxes tend to deteriorate relatively quickly and therefore arrangements should be made for their prompt sale on arrival at destination. Unnecessary storage should be avoided, and in spite of alleged difficulties, it is advisable to moist pack progressively throughout the year as demand requires; preferably immediately prior to sale. If

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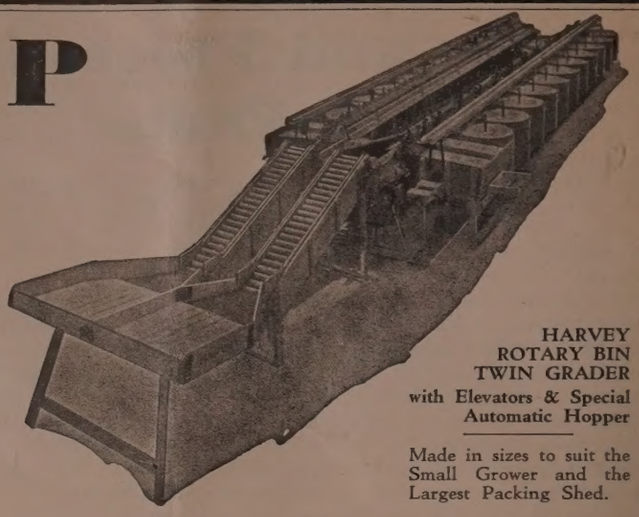

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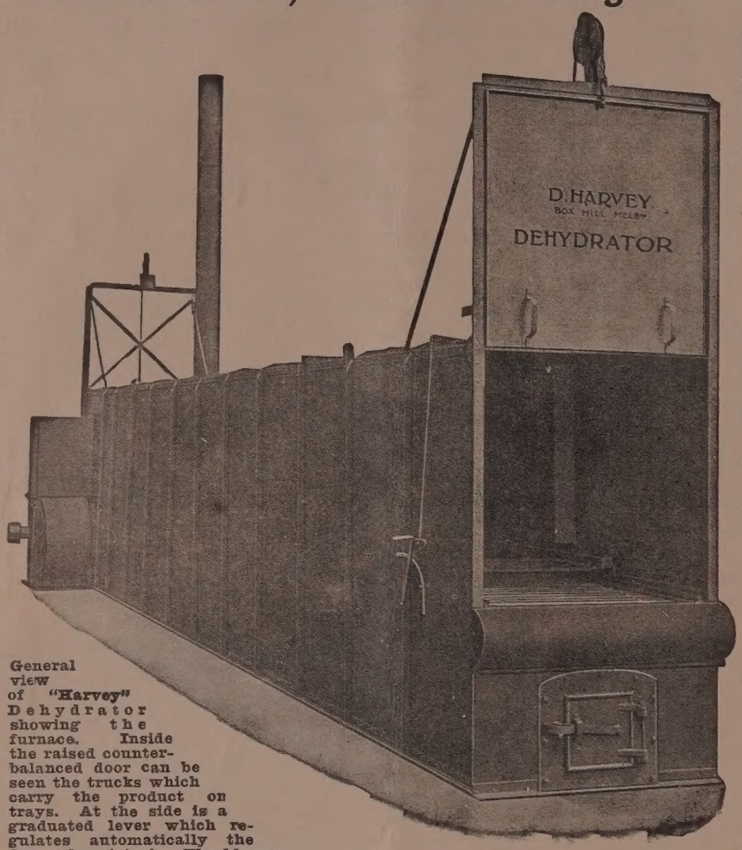

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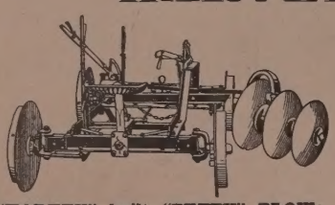

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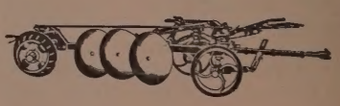

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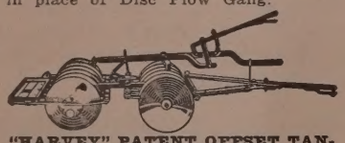

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all Apricots are moist packed at the end of the drying season, wastage must be expected with those subjected to prolonged storage.

Evidence is also available that climatic conditions during storage play an important part. Apricots containing 18 per cent. moisture and 12 grains sulphur dioxide per pound retained their color and generally attractive appearance when stored for about four months in Melbourne; but a portion of the same box darkened to an unmarketable degree when stored for the same period in northern Queensland. It would appear that no attempt should be made to store moist pack Apricots under hot humid conditions (except perhaps in tins) and that dry pack Apricots are preferable and should be advocated. Storage under dry, well sheltered conditions gives the best results.

f. **Reconditioning Darkened Apricots.** Parcels of Apricots and Peaches which have become dark and unattractive subsequent to packing come under notice each year. Such deterioration generally occurs in moist packed fruit, though darkening is occasionally noted in dry packs having a low sulphur content.

Moistening, resulphuring, and further drying, as described above, restores the bright color considerably; after rejection by hand picking of the pieces which do not respond to treatment, the parcels are rendered marketable. Prior to reconditioning, the parcel should be classed according to color, in order to allow differential treatment of the various classes. Inspection during sulphuring will indicate the extent of sulphuring necessary.

g. **Reduction of Sulphur.** Over-sulphured Apricots can be reduced in sulphur dioxide content to below the prescribed maximum by immersion in a 10 per cent. solution of hydrogen peroxide (10 volume) for 15 minutes, followed by draining and re-drying. This treatment has been adopted when reductions of the order of 6 to 8 per cent. sulphur dioxide have been necessary. In other cases, where only a slight reduction is required, such reduction normally occurs during storage in the moist packed conditions, or may be effected by moist packing parcels showing excessive sulphur as a dry pack.

Apples.

The Committee has not yet carried out any investigations into the drying or dehydrating of Apples, but it submits the following procedure, compiled and published by Mr. W. M. Carne, Department of Commerce.

8. Fruit Prior to Drying.

a. **Varieties.** Heavy varieties (mid-season to late) give the best drying ratios. Gravenstein and Ribston appear to be best of the early varieties, although the ratio is inferior to later types. Sturmer, Cleo., Rome, Stone and Dunns (and probably Granny Smith and Rokewood), are among the best; Jonathan gives rather a low ratio.

b. **Condition and Sorting.** Apples should be mature, ripe but crisp, and not mealy. Those with rots, or of very irregular shape, or with flesh injuries (including Codling injury) or bad bruises, should be discarded. The fruit should be free from grit and dirt which may injure the peeling knives. Effective sorting ensures maximum output from the peelers.

The most economical sizes of fruit are from 2½ to 3 inches diameter. Over 3 inches, difficulty may arise in peeling, although 3¼ inch fruit is very economical if the peelers can handle this size satisfactorily. The larger the size, the less the waste, and the less the time required per ton of Apples for peeling and trimming; for 2¼ inches the time being about double that for 3-inch fruit.

9. Preparation of Fruit.

a. **Peeling and Coring.** Care should be taken to see that fruit is properly centred on the coring knives to ensure maximum removal of core cells; very irregular fruit is difficult to centre and does not peel well, and requires undue trimming. A common defect of the Australian dried product is the excessive occurrence of seed cells; this can be reduced by the installation of seed celling equipment, which takes out the seed cells without taking out a large core from the rest of the Apple. The use of ⅞ inch coring knives instead of the standard ⅝ inch reduces the seed cells left; but increases waste. Seed celling machines are necessary for a high-grade product.

b. **Trimming.** There should be sufficient trimmers to handle the fruit as fast as it comes from the peelers. They must remove any skin left by the peelers and also all discolored flesh. Apples requiring much trimming should be discarded. Effective sorting before peeling reduces the amount of trimming necessary. Stainless steel knives should be used by trimmers.

If the delivery of Apples from peelers is too fast for the trimmers or the slicing plant, the peeled Apples should be placed in a brine bath (3-5 per cent. common salt) to prevent browning before sulphuring.

c. **Slicing.** Ring slicers are best known and are preferred, but other slices and quarters (or Orange slices) are permitted under export regulations, but must not be mixed. To avoid mixing, only one type of slice should be cut. Ring slices should be cut to ½ inch and quarter slices about the same thickness at the thicker side. When centring is not automatic, care should be taken to see that Apples are properly placed for ring slicing, as the quality increases with the percentage of rings. Quarters mean slices (Orange slices) of any thickness, cut like Orange segments.

10. Sulphuring.

Sulphuring in some form is essential. It helps to preserve the flavor and nutritive value and checks insect attack. It stops browning during drying and the effect persists long enough after drying to preserve the color for some time, the time depending on the conditions of storage.

Three methods of treatment are in use:—

(i) **Sulphur fumes only. (a) Before slicing,** the peeled and cored Apples are carried by a conveyor or elevator, through a long sulphuring box which is charged with heavy sulphur fumes from a sulphur stove. The time required is 45-60 minutes. **(b) After slicing,** (1) the slices are passed through the sulphur box as with whole Apples, but the time may be reduced to 30 minutes; (2) the slices are spread thinly on trays which are stacked on trucks and run into a sulphuring chamber and sulphured for 30 minutes.

(ii) **Metabisulphite treatment.** Slices are dipped in the following solutions:—

Potassium metabisulphite, 2½ lb.;

Citric acid, 2 ozs.

Water (soft, preferably rain), 200 galls., drained for a few minutes to save the solution and then sent to dryer.

(iii) **Combination treatment.** North American experience indicates that the best method is a combination of sulphuring and dipping, using sliced and not whole fruit. The sliced fruit is first dipped in the metabisulphite solution and then sulphured for 15-20 minutes.

As a tendency to discolor rapidly has been a defect of the Australian product, the effectiveness of the method adopted should be carefully watched. Browning is hastened when the dried fruit is exposed to warm temperatures, and if the water content is high, that is, above 24 per cent.; direct sunlight tends to turn the fruit pink. Tests should be made with finished dried fruit in a warm place at about 70 deg. F.; if browning occurs rapidly, the sulphuring treatment should be varied or resulphuring after drying adopted. Cool storage is desirable for stocks, especially if resulphuring is not practised.

When dry rings show a tendency to early discoloration, or have to be held more than a month or so in the ordinary storage, resulphuring after drying is desirable. Exposure to sulphur fumes for 20 minutes is sufficient.

11. Drying.

Efficiently designed and controlled dehydrators have been found in North America to produce a better article than evaporators, and in about half the time. Modern Apple dehydrators are especially designed for hot-end loading. Experience in Canada has shown reversal of loading in the tunnel type dehydrator, designed originally for cool-end loading, is not so satisfactory; this is the type used in Australia. Danger of scorching increases with the dryness of the fruit; 165 deg. F. is approximately the danger point. In the coolend loaded dehydrators used in Australia the temperature at the hot end should be maintained as nearly as possible at 160 deg. F The humidity of recir-

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CANADIAN CASES—		
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TOPS AND BOTTOMS	17 x 11	1,000's
PEARS—		
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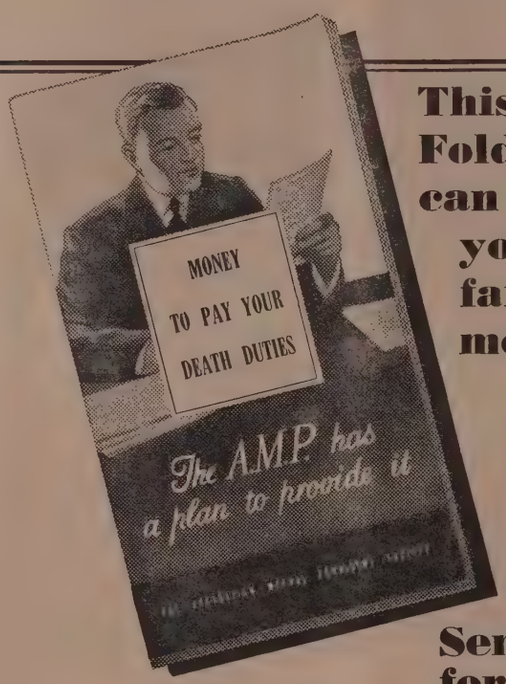

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culated air, as shown by the wet and dry bulb thermometers, should not be allowed to exceed drying is essential and the moisture content should be about 18 per cent. with a maximum of 65 per cent. by regulating the intake of outside air. Proper 23 per cent.

Trays should be of well-seasoned wood with the floor made of narrow slats spaced 5/16 in. apart. The wood should be of a kind not likely to stain or cause odors in the fruit. The nails should preferably be cement-coated to prevent discoloration of the fruit; ordinary wire nails should not be used. New trays should be warmed, greased with hot tallow and then placed in a hot place or in a dehydrator to allow the tallow to soak into the wood. Greasing reduces the tendency of the fruit to stick to the wood. Trays should be kept clean from brown deposits, which may stain the fruit, by washing with warm water.

(Note: Some Apples are sun-dried. After sulphuring, the slices are spread about one layer thick, either on ½ inch mesh wire trays (the wire having previously been brushed with hot paraffin wax) on clean wooden trays. The fruit should be turned several times during the day. When nearly dry, about six trays are tipped on to one tray and placed for about one hour in the sulphur box.—W.R.J.)

12. Sweating or Curing.

Different batches and different parts of the same batch will vary in moisture content after drying. It is necessary to bulk the fruit in heaps or wooden bins to a depth not exceeding 4 feet to secure uniformity of moisture. Sweating should go on until the fruit is uniform in moisture and pliable in texture; this may take from one to several days. Sweating is hastened by turning the fruit and by covering. Over-dry brittle batches may be mixed with less dry fruit, or brittle batches may be moistened slightly by sprinkling with the metabisulphite solution as the fruit is turned. The final desirable moisture content is about 23 per cent. Unitl experience has been gained in the judgment of moisture content, the assistance of Department of Agriculture chemists in determining the moisture content of samples is advised.

The sweated product should be passed through a rotation screen with a 1 inch mesh, to remove small pieces, seeds, etc. The chips can be screened again using a ⅝ inch mesh to remove seeds, etc., and to produce a chip grade for local use.

Factors Essential to the Production of a High-grade Pack.

13. General.

The processing details already outlined have indicated the various points to which strict attention must be paid to ensure a successful and high-grade pack. Some of these points warrant reiteration in summarised form, with stress on the influence they exert on keeping qualities.

Hand picking, commenced in the field and completed in the factory, should be sufficiently thorough to ensure uniformity in color. A standard of texture, shape and quality of size is defined by the Department of Commerce and judged by inspection.

Little trouble is experienced with the sun-dried pack, in which moisture usually ranges from 12-15 per cent.; dry-pack fruits which retain a bright color at the end of the drying period usually keep satisfactorily. In dry packs, extreme dryness, associated with harshness, should be avoided.

Moist packing has now been practised in Australia for a number of years and it is with the moist pack that particular care is necessary to ensure keeping quality and high grade. Until recently, such fruit was usually packed in paper-lined boxes! under these conditions of packing, sulphur dioxide content decreases on storage, and values over the prescribed maximum are rarely experienced by the time the fruit is marketed. Dried fruits for the use of the armed forces are now packed in airtight, sealed tinplate linings within wooden boxes. Under these conditions, no loss of moisture and little change in sulphur dioxide content is to be expected, and a more careful observance of moisture and sulphur dioxide standards is necessary.

14. Apricots.

For the dry pack, keeping qualities are still satisfactory with sulphur dioxide somewhat lower than the prescribed maximum (American experience suggests 11 to 12 grains per lb.), but Apricots intended for the moist pack should have a high initial sulphur dioxide content, even exceeding the maximum of 14 grains per lb.

Moist packed fruit is usually subject to progressive darkening during storage, a serious defect when such darkening becomes pronounced. Excessive darkening subsequent to packing is a common form of deterioration associated with low sulphur dioxide and accentuated by excessive moisture. The permissible maximum sulphur dioxide content in fruit offered for

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sale (14 grains per lb.) is statutory and must be observed; for the moist pack, the sulphur dioxide must be right up to this maximum at the completion of processing to ensure sound keeping in various conditions of storage.

The moist pack in sealed tin linings or in boxes for export should contain not more than 20 per cent. moisture, and in boxes paper-lined for local consumption, not more than 25 per cent. At present, when destination and duration of storage are frequently unknown, a maximum moisture content of 20 per cent. should be observed for all moist pack Apricots.

15. Peaches and Nectarines.

Peaches and Nectarines darken quickly with the present technique of moist packing, and these fruits should therefore be packed in the sun-dried condition—at least until a satisfactory moist pack technique has been evolved. These fruits retain less sulphur dioxide than Apricots and there is little risk of over-sulphuring.

16. Pears.

The processing of Pears, which are invariably packed dry, is practically confined to the field, and improvements that can be effected in the packing shed are limited; attention to grading for size and appearance, and attractive packing, are the chief requirements. It is very difficult to over-sulphur Pears; rather, it is difficult to ensure adequate sulphuring. If satisfactory at the end-point of field processing, Pears usually retain their condition subsequently, unless exposed to very moist storage conditions.

17. Prunes.

Evenness of size, softness in the skin and entire absence of mould (even after being exposed to the air for some time) are essential requirements in a high-class pack. The dry-canned or dessert Prunes should have a moisture content not in excess of 33 per cent.; the boxed Prune, a maximum of 25 per cent.

18. Apples.

It is difficult to oversulphur Apples; investigations are now under way to determine the optimum sulphur dioxide content in dried Apples, both in paper and tin-lined containers. Dried Apples should not contain more than 24 per cent. moisture; the higher the moisture content the more quickly the fruit will deteriorate. Stocks should be held in cool storage, especially if the fruit has not been resulphured after drying; this checks browning, excessive drying and insect infestation.

Pest Control.

19. Fumigation.

All boxes or tins of dried fruit should be fumigated at the packing point to ensure the destruction of any insect pests which may be present. One of the most convenient and efficient methods available is fumigation of each individual box with ethyl formate; this method has been used with satisfactory results by most of the dried fruits packing houses for a number of years. The fumigant, ethyl formate, is manufactured in Australia and sold under the trade name "Eranol Z3." It is a volatile liquid, and is poured on top of the fruit immediately before the lid is applied. The dosage employed is 10 ccs. (approximately one dessertspoonful) for 56 lb. boxes; 5 ccs. for 28 lb. boxes; 7 to 8 ccs. for 56 lb. tins; and 4 to 5 ccs. for 28 lb. tins.

This treatment does not harm the fruit nor affect its flavor. Where the fruit is packed in boxes without tin linings, the ethyl formate evaporates and disappears within a few hours. Where tin containers are used the vapor also disappears, though somewhat more slowly, as a result of hydrolysis to formic acid and ethyl alcohol; these substances are quite harmless in the concentrations likely to be present.

With an insect proof container, such as a properly sealed tin, reinfestation cannot take place, but in the case of fruit packed in wooden boxes without tin linings, reinfestation may occur at any time after the ethyl formate has disappeared.

Methods of Analysis.

20. Determination of Sulphur Dioxide.

The standard method recommended is the Monier-Williams Method (xx). For packing house control purposes, a rapid "workshop" method (see below) is considered to be sufficiently accurate. The use of more accurate methods is not usually warranted on account of the very large errors involved in sampling lines of fruit in the packing houses.

"Workshop Method."

a. Solutions Required. One-tenth normal iodine solution containing 12.7 grammes of iodine and 18 grammes of potassium iodide per litre. To be kept in a brown or blue colored bottle. Starch solution prepared by adding one teaspoonful of potato starch to about two cups of boiling water and continuing boiling for a few minutes. To be made fresh daily.

b. Apparatus Required. Stoppered bottles: A number of wide-mouthed glass-stoppered bottles of about 600 ccs. capacity. In an emergency, screw-stoppered lemonade bottles will do; but are not nearly as convenient as the wide-mouthed glass-stoppered bottles. One 50 cc. burette. Rough chemical balanee and set of gramme weights. Small mincer. Burette stand.

c. Method. Exercise care in obtaining a representative sample, which should then be "quartered down" until about ¼ lb. remains. Pass this final ¼ lb. sample twice through a small mincer. Weigh carefully 44 grammes of the minced sample and transfer to the stoppered bottle. Add about 500 ccs. (say two cups) of water. Insert stopper and shake well every 10 minutes until two hours have passed. Add about a teaspoonful of the starch solution, and then run in iodine solution from the burette. The iodine solution should be added in small amounts, one c.c. at a time towards the end of the titration, shaking vigorously for 15 seconds after each addition. The titration is finished when the blue color produced by the last addition of iodine persists after 15 seconds' shaking. Each c.c. of iodine used represents one grain per pound of sulphur dioxide, so that the sulphur dioxide content is simply the burette reading in ccs.

d. Special Notes.

(i) A green color shows that too little starch solution has been added; repeat test with more starch.

(ii) If gramme weights are not available, a two-ounce sample may be used, in which case the number of ccs. of iodine used multiplied by .78 gives grains of sulphur dioxide per pound.

(iii). The iodine solution and the apparatus may be obtained from suppliers of chemical apparatus at a small cost.

(iv). The method is admittedly approximate. For the purpose in view it is sufficient to know the sulphur dioxide content to within plus or minus one grain per pound.

(v). By using a number of bottles, a considerable number of determinations can be made in a relatively short time.

(vi). The method is obviously an empirical one and it is therefore essential that the directions be adhered to rigidly.

21. Determination of Moisture.

Moisture determinations should be made on the edible portion of the fruit, discarding the stone.

The vacuum oven drying method is considered to be the most accurate method for determining moisture in dried fruits, as when the necessary precautions are taken it usually gives an end point which is slightly more definite than is the case with other methods, while causing only slight caramelisation or other visible chemical changes. The Official A.O.A.C. (xxx) method which stipulates drying for six hours at 70 deg.

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C. in flat metal dishes, with special precautions as regards spreading, oven ventilation and pressure, has therefore been chosen as the standard method. Strict adherence to every particular of the prescribed method is essential. All other methods, such as the toluene distillation or the electrical conductivity methods, must be calibrated against this vacuum oven method.

For control purposes in packing houses the conductivity (moisture meter) method is the most convenient to use and, when properly calibrated and suitable tables are prepared, the results obtainable with moist dried fruits should be sufficiently accurate for practical purposes. The degree of accuracy varies with each variety of fruit. For all dried tree fruits the appropriate American conversion tables, to convert meter readings to per cent. moisture, may be used with sufficient accuracy for packing and control; copies of these tables may be had on application to the Research Station, Merbein. It is hoped to produce conversion tables with a higher degree of accuracy.

Failing the moisture meter, toluene distillation (xxx) for 2½ hours can be recommended as reasonably satisfactory, if a correction factor be applied; with dried Apricots, 2.5 per cent. should be subtracted from the moisture content obtained; with Prunes, 1 per cent., to give a figure approaching that which would be obtained by vacuum oven method.

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(xx) Methods of Analysis of the Association of Official Agricultural Chemists, 5th Edn., 1940, p. 463.

(xxx) Methods of Analysis of the Association of Official Agricultural Chemists, 5th Edn., 1940, p. 336.

(xxxx) Ibid, p. 353.

Madge: "Has John come out of the hospital yet?"

Floss: "No."

Madge: "Pretty sick, I suppose?"

Floss: "No—pretty nurse."

Re-Working Citrus Trees

(E. C. Levitt, H.D.A., Fruit Instructor.)

WHETHER TO RE-WORK or grub out "off-type" and unpopular varieties of citrus is a problem that frequently arises in coastal districts. Ofter trees are grubbed out that could have been economically re-worked. The reworked trees having a large established root system, will mostly produce crops much earlier and in greater quantity than will the replacements.

However, quite a number of points must be considered when making a decision to re-work trees, and quite a number of practices may be carried out that will contribute towards the success of re-working citrus trees in coastal districts. Among these are the following:—

Use Sound and Vigorous Trees: (1) The trees to be re-worked should be sound in root, trunk and limb. Very old trees are not good subjects as a rule, because even if the dangers of wood rot invasion are overcome, their effective life cannot be very lengthy.

(2) They should be reasonably vigorous. Adequate fertilizer will be necessary if vigor is lacking, and should preferably be applied prior to cutting back.

Preparations for Budding: (3) Cutting back should be done in September, if it is desired to bud in the Autumn. Later cutting would not allow time for the shoots to round out (mature) before the following Spring. Cutting back during late Spring and Summer should be accompanied by an application of whitewash to the exposed limbs to prevent sunscald.

(4) In areas where "Dicky Rice" weevil is known to exist, steps must be taken to band the trees with a sticky banding material to prevent the weevils damaging the new growth.

(5) Do not thin the new shoots until the growth has hardened, and then do not be too drastic. It is preferable to have a few shoots and buds in excess than to be a few short.

(6) The shoots will be ready for budding when the portion near the base has lost its angular appearance and is nicely rounded. The bark must lift freely from the wood. Budding into wood that has not quite lost its angular appearance is never satisfactory, and is one common cause of failure. It is also inadvisable to bud into wood more than twelve months' old, and this is especially so when Navel buds are used. Should the buds fail in the Autumn and again in the Spring, or the trees not budded for any reason, it is more satisfactory to cut back the shoots and secure a new growth for budding in the following Autumn.

Budding Wood: (7) Buds should be taken from round, well-grown wood, preferably not more than twelve months old. Immature angular wood should be avoided.

(8) The buds should be cut with a small amount of wood, which can be removed before insertion. The wood cannot be removed safely in the case of buds with thorns, which should be cut with the absolute minimum amount possible. Much wood in buds reduces the "take."

Budding and After-care: (9) Insert the buds into the new shoots as near to their base as possible, and into shoots which have lost any angular appearance in the wood near the base. It is necessary that the bark should be lifting freely. If it has to be forced from the wood, good results cannot be expected. Budding into twigs which have not matured sufficiently to become rounded is a frequent cause of failure.

(10) Light and uniform tying of the buds helps considerably in securing a satisfactory "take." Wet weather is often responsible for poor "takes" in citrus budding, and it is often noticed that buds well wrapped and tied stand wet weather very much better than similar buds not so well tied.

(11) The ties should be released about 21 days later. Earlier removal of ties adversely effects the bud in many cases, while cutting in is likely to occur if a longer period elapses.

(12) The budded shoots are, if Autumn budded, allowed to remain uncut until the Spring, when they are cut off 4 or 5 inches above the bud. If Spring or Summer budded, the shoots may be cut back at the time the ties are released.

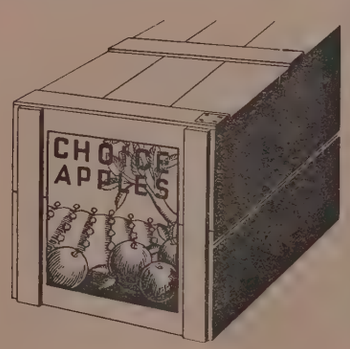
Regular and careful attention is necessary after "cutting off" to suppress the multitude of new shots and suckers that arise from the original tree. As the inserted buds commence growth, extreme care must be taken to avoid damage to the tender shots and to prevent them from being outgrown by suckers. A little extra care at this period is well worth while and helps greatly to reduce the "no crop" period. The new shoot may be loosely tied to the stub above the bud to prevent accidental dislodgment.

Bud Navels in March: Navels have always shown themselves to be more difficult to propagate than other Oranges, and it is not advisable to apply Navel buds later than March. April budding is often disappointing. If budding cannot be completed by March, then it should be deferred to the Spring. Poor results can also be expected, when Navel buds are inserted into shoots more than twelve months old. Should Spring buds miss, then it will be better to cut the shoots back so that Autumn buds can be placed into young wood.

In general, budding is to be preferred to grafting in coastal districts, the buds making much more rapid progress than grafts. However, when Emperor Mandarins are to be worked over, the possibility of brown spot attacking shoots produced for budding is great, and in such a case the use of side grafting is suggested.

Do not re-work White Siletta Oranges to Lemons. These species are quite incompatible, and while the Lemon buds "take" well the growth is very disappointing.

Finally, it must be emphasised that regular attention during the first year is essential to success, and if this cannot be given, the work is better not undertaken. — "N.S.W. Agric. Gazette."



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Apple & Pear Acquisition

FEDERAL GOVERNMENT DECIDES TO PAY 6d. PER UNIT.

MUCH SATISFACTION is expressed at the decision of the Federal Government to pay growers on the basis of 6d. per unit—the same price as last year.

In announcing this Senator Fraser, Assistant Minister for Commerce, said that the Government had decided to make a first payment of 4d. a unit to Apple and Pear growers on the fruit delivered, and a final payment of 2d. a unit to be paid by June 30.

Certain previously unwanted varieties and those below grouping had been brought into a higher group under the scheme this year, greatly benefiting growers. Because of the dry conditions size of fruit had been reduced from 2½ to a smaller size.

Senator Fraser added that attention was being paid to the question of **price fixing**, the basis of which would be the selling price fixed by the Board and the price paid by the consumer. An announcement would be made soon.

Warning to Bootleggers.

Continuing, the Minister said that fruitgrowers who contravened the regulations by disposing of fruit illegally would be prosecuted. Similar action would be taken against those who bought from other than the licensed and approved agents of the Board.

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Strong dissatisfaction had been expressed to members of the Government at the previous announcement that the payment would be only 4d. per unit, and leaving the payment of the balance of the 2d. per unit only as a possibility. In all the States the opinion was unanimous that the Goverment was making a mistake; it would appear that there was a fair amount of bootlegging with early varieties.

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In Victoria growers came openly to the Victoria Market and offered Apples and Pears for sale. Their names were taken and prosecutions have been launched. Wherever it was found that retailers had made illegal purchases the fruit was confiscated and prosecutions will follow.

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A strong case has been put before the Government for special consideration to growers in the Melbourne Metropolitan Area; an increased number of units is sought because of the higher costs of production, and also because of the provision of cool stores erected by the enterprise of local growers and now used by the industry at large.

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Provision has been made in the administrative system for growers in specified places to carry on private trading; full details are obtainable from the Board offices in the several States. Growers can also send single cases of Apples to friends by mutual arrangement.

Replying to criticism in a Western Australian paper, Mr. R. M. Carter, Superintendent of the W.A. Committee of the Apple and Pear Marketing Board, stated that last season all the available cool storage space was used for Apples and Pears, the surplus having occurred at the harvesting period.

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The charge of inefficient administration in Tasmania made by the Minister of Agriculture (Mr. D'Alton) is not admitted by the Tasmanian State Superintendent, Mr. L. S. Taylor.

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In Queensland three agents were removed from the Brisbane panel because of alleged illegal trading in Apples. Also two growers' trading licenses were cancelled.

Hail Insurance.

A matter that is still outstanding is that of hail insurance. The Federal Government is being asked to introduce a hail compensation system, by deducting from payments to growers a small percentage per case to provide for hail damage.

The report of the Joint Parliamentary Committee recommended the establishment of a hail insurance system, plus compensation to growers who suffered in 1941.

ADVANCES ON APPLES AND PEARS.

Senator the Hon. J. M. Fraser, Assistant Minister for Commerce, referring to the recent announcement of the Government's decision to increase the value of the rate of the advance to growers under the Apple and Pear Acquisition Scheme from 4d. to 6d. per unit, stated that he wished to make it clear that on all fruit qualifying under the acquisition scheme and delivered to the Apple and Pear Marketing Board, growers would receive an initial advance at the rate of 4d. per unit, and a second and final payment at the rate of 2d. per unit to be paid by the 30th June, 1942.

In respect of fruit qualifying by tree measurement, but of which delivery is not required by the Board, the same unit values for advances will be applied, but a deduction of 2d. a bushel will be made to offset the harvesting costs incurred by growers required to deliver their fruit to the Board, as against fruit which does not have to be picked for delivery to the Board. This deduction is in accordance with the findings of the Joint Parliamentary Committee which recommended that all fruit qualifying by tree measurement but not required for marketing should be subject to a de[duction] of 2d. a bushel.

The Minister stated th[at] addition to the payment advances to growers at the sa[me] unit value as last season, Ap[ple] and Pear growers will also ben[e]fit by the regrouping and re[-]classification of varieties in accordance with the recommendations of the Parlamentary Committee. This year a number of varieties, which had previously been excluded from marketing and compensated on a tree basis only, had now been classified in the Schedules and would receive advances in accordance with the rates provided in the respective States.

IMPORTANCE OF CO-OPERATIVE ENTERPRISE.

Stressed at International Agritural Conference.

MANY TOPICS of world-wide importance were discussed at the 18th International Congress of Agriculture, which Mr. A. G. Strickland, M.Ag.Sc. (S. Aust. Dept. of Agriculture) attended as a Commonwealth delegate. An interesting review of the proceedings has been published in the "S. Aust. Journal of Agriculture."

With regard to forms of enterprise in agricultural secondary industries and their influence on disposal of agricultural produce:

Three forms of enterprise were recognised by the reporter (Dr. Wunscher, Budapest, Hungary), namely, the "capitalistic" enterprise which might be a private firm, company, or **consumer** co-operative society; the State enterprise, where the agricultural produce is processed by the State (e.g., the tobacco monopoly in Hungary); and the **producer** co-operative enterprise. The three forms of enterprise were discussed fully, and interesting information was given regarding the growth and operation of Hungarian producers' co-operatives engaged in the milling of Paprika spice and the processing and distribution of milk.

The reporter was strongly biased in favor of **grower co-operatives**, but recognised the value of competition between co-operative and "capitalistic" private enterprises, and summarised his views as follows:—

Firstly, he considered it desirable that in branches of industry concerned in processing primary produce, **industrial co-operative** founded by producers should be given a certain scope, and should be enabled to handle at least 50 per cent. of the total produce in their own co-operative plants.

Secondly, that, insofar as monopolies may be unavoidable, farmers should demand that the functions of any monopoly should be exercised by **producers' co-operatives** working under State control in order that the interests of consumers should not be adversely affected.

SOUTH AUSTRALIAN NEWS AND NOTES

Official Reports and Notes of the South Australian Fruitgrowers' and Market Gardeners' Association.

S.A. FRUITGROWERS' AND MARKET GARDENERS' ASSOCIATION INC.

The Executive Committee meeting of the S.A. Fruitgrowers' and Market Gardeners' Association Inc. was held on Friday, February 27, 1942, in the Board Room, 288a Rundle-street, Adelaide.

Mr. R. A. Cramond (Vice-President) occupied the chair, and the following members were present:—Messrs. W. H. Ind, O. Essalbach, N. T. Hobbs, J. Turner, H. W. Parsons, C. W. Giles, G. Jennings, E. L. Giles, A. Stafford, R. B. Pritchard, W. J. Bishop, G. H. Schultz, C. Ridley, W. Wye, F. Hughes, J. B. Randell, A. O. Petersen, L. J. Wicks, Legh. Winser, L. B. Pfeiffer, S. M. James, A. Floyd, G. Clifton, M. J. Vickers, A. G. Strickland (Chief Horticulturist).

Apologies: Messrs. C. J. Pitt, J. D. Yeatman, C. Stanford, M. Packer, and L. G. Pethick.

Minutes of January meeting read and confirmed.

Standard Time: Mr. L. J. Wicks brought forward for discussion a suggestion for the standardising of times between South and Eastern Australia.

Mr. L. J. Wicks moved "That the matter be discussed, and if considered advisable, a recommendation be forwarded to the Premier urging its adoption." Seconded Mr. W. J. Bishop. Carried.

Mr. L. J. Wicks moved "That this Association considers it would be of immense benefit to South Australia if a standard time for Southern and Eastern Australia was fixed, and suggests that endeavours be made to bring the proposal into effect on a fifty-fifty basis, viz., South Australian time to be advanced 15 minutes and Eastern Standard time to go back 15 minutes." Seconded Mr. W. J. Bishop. Carried.

Country Carriers: Mr. W. H. Ind reported that the Sub-Committee appointed last meeting to investigate the position of country carriers who had been put off the road following an order from the Liquid Fuel Control Board, met the Chairman of the Liquid Fuel Control Board (Sir Richard Butler). The deputation had been well received, but it was pointed out that the Order prohibiting carriers to operate was a National Emergency, and as such, no relief from the Order could be granted.

Military Vegetable Supplies: The Secretary reported that following a request from the Army Authorities for the co-operation of the Association in arranging for a continuity of vegetable supplies for Army needs, a conference between leading growers and Army representatives had been held at the Keswick Barracks. At the conclusion of the conference a Committee was appointed to secure information as to supplies at present available and the portion as to advanced plantings. The Committee had met on a number of occasions, and a comprehensive statement had been compiled and forwarded to the Department of Supply and Development. The Committee was now awaiting further advice from the Department.

Correspondence was received as follows: — (1) Cheer-Up-Society re activities of S.P.F. Hostel. (2) State War Loan Committee re £35,000,000 Liberty Loan. (3) Minister for War Organisation of Industry re reorganisation of industry to meet war needs. (4) Deputy Prices Commissioner enclosing press cutting of order issued by the Commonwealth Prices Commissioner re the pegging of Tomato prices throughout Australia. (5) Returned Soldiers' and Sailors' Imp. League.

War Organisation of Industry: The Secretary reported that a questionnaire had been forwarded to all members, and at the present information was being compiled for submission to the Minister.

In regard to the possibility of rationalisation as suggested in the Minister's circular, Mr. L. J. Wicks moved, "That the Association offer its full co-operation to the Minister and will make available the services of experienced growers to assist in the matter." Seconded Mr. W. J. Bishop. Carried.

Reports.

Fruitgrowers' Society: Mr. W. J. Bishop reported continued progress of the Trading Section. The Society has agreed to conduct the Apple and Pear Selling Floor in Adelaide on behalf of the Australian Apple and Pear Board.

Cherry Section: Mr. W. J. Bishop reported that a Committee meeting of the Section would be held shortly.

Celery Section: The Secretary reported that a few consignments of Celery had gone forward to Sydney, but transport difficulties were being experienced.

Soft Fruit Section: Mr. F. Hughes, in apologising for the absence of the Chairman, Mr. L. G. Pethick, reported that the soft fruits market was firm due to seasonal conditions and the light crops.

Apple Section: Mr. M. J. Vickers reported that the Apple and Pear season for 1942 was in progress, early supplies being light. Mr. J. Turner brought forward the matter of 2⅛ inch Jonathans which were not accepted under the scheme. He submitted samples of this fruit and suggested the Association approach the State Apple and Pear Board re the taking in of this size fruit; other growers supported Mr. Turner's contention, and Mr. S. M. James moved "That the Apple and Pear Board be asked to accept 2⅛ inch Jonathans, as 'Fancy'." Seconded Mr. J. Turner. Carried.

Citrus Section: Mr. O. Essalbach reported that citrus supplies were short, and the demand strong.

Paracombe Branch: Mr. A. E. Brealey reported that the Paracombe Cool Store was in operation for the 1942 Apple and Pear season.

Cudlee Creek Branch: Mr. R. B. Pritchard reported similarly to Mr. Brealey concerning Cudlee Creek Cool Store.

Onkaparinga Branch: Mr. L. B. Pfeiffer reported that general meetings of the Branch had been held to discuss the matter of supplies of Potatoes for Army needs.

General Business: Protests from growers had been received that a certain merchant was selling Apples and Pears from a lorry in the markets, and as growers were not permitted to do this Mr. G. H. Schultz moved "That a protest be forwarded to the State Committee re merchants operating from stands in the markets." Seconded Mr. H. W. Parsons. Carried.

Finance: The Secretary submitted the financial statement, together with accounts for payment.

APPLE AND PEAR SELLING FLOOR TO OPEN IN ADELAIDE.

As required under the 1942 Apple and Pear acquisition scheme an Apple and Pear Board Selling Floor will be opened in Adelaide during March.

The opening of the Floor will usher in a new era of marketing in South Australia, as in the past the marketing of Apples and Pears—as well as all other lines—has been conducted by individual growers from their lorries in the market.

Last Apple season licensed growers from cool stores and packing sheds were permitted to sell fruit from their stands in the markets as Agents for the Apple and Pear Board. This procedure proved very successful, and approximately 40 per cent. of the fruit sold in South Australia last season was distributed by this means.

Growers made a firm stand for the retention of this system during the 1942 season, but following two conferences with Mr. J. B. Mills (Chairman, Australian Apple and Pear Board) and the S.A. Apple and Pear Committee it was found that a continuation of the system was impossible.

Growers contended that the industry was theirs and they should have control of it. This contention led to the Fruitgrowers' and Market Gardeners' Society Ltd. applying to the Board for the opportunity of conducting the Adelaide Selling Floor, and following a conference between Messrs. J. B. Mills and H. Baker (Chairman and Secretary of the Board) and the Committee of Management of the Society this was granted.

The Selling Floor is scheduled to open on Monday, March 9, and will be situated in the South-Eastern portion of the New Market.

A fine team has been selected to run the Floor, with Mr. E. B. Chamberlain, of Paracombe, as Floor Manager.

PEGGING OF TOMATO PRICES.

Consternation was caused among Tomato growers in South Australia at the Order issued by the Commonwealth Prices Commissioner (Professor D. B. Copland) on February 11, pegging Tomato prices throughout Australia.

The price fixed, viz., 8/- per bushel case (including the cost of case) on the garden does not cover cost of production in South Australia, and if this price is to prevail it will mean the cessation of production in this State. Particularly will this apply to glass-house growing, which over the past decade has developed into a very valuable State industry, and on which many hundreds of people depend either directly or indirectly for their

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livelihood. It is also disturbing in view of the fact that the Army will be requiring large supplies both for canning and dessert purposes.

The S.A. Fruitgrowers' and Market Gardeners' Association has taken the matter up with the Deputy Prices Commissioner in South Australia (Mr. W. J. F. McCann) with the view of having the matter reviewed, particularly so as a separate price has been fixed for New South Wales.

The South Australian Fruit Marketing Association

The monthly meeting of the Executive of the S.A.F.M.A. was held at Adelaide on February 27.

There were present: Messrs. J. B. Randell (Chairman), D. W. Hannaford, S. M. James, F. F. Redden, P. R. B. Searcy, M. G. Basey, R. O. Knappstein, A. G. Strickland, C. L. Winzer, L. J. Bishop, L. G. Heading, A. O. Petersen, R. B. Pritchard, A. Brealey, M. J. Vickers, A. R. Willsmore, R. G. Hannaford, and the Secretary.

Deputy Chairman: Mr. P. R. B. Searcy was unanimously reappointed as Deputy Chairman.

Williams Pears: On the motion of Mr. R. O. Knappstein, seconded by Mr. M. G. Basey, it was resolved:—

"That the Association endeavour to eliminate the word 'Duchess' and encourage the use of the correct name 'Williams Bon Chretien' or 'W.B.C.' when referring to these Pears."

Growers Sub-Committee: Mr. S. M. James, Chairman for the coming year, reported that a discussion had taken place as to whether the Sub-Committee should continue, and a majority of members were in favor; but owing to harvesting difficulties it had been agreed to suspend the Sub-Committee meetings during March and April; the next meeting would be held on Friday, May 29, when Mr. A. G. Strickland, Chief Horticulturist, had kindly consented to speak on "Hormones."

Mr. P. R. B. Searcy: On the motion of Mr. R. O. Knappstein, seconded by Mr. A. O. Petersen, it was resolved:—

"That an expression of appreciation of the services of Mr. P. R. B. Searcy as Superintendent under the State Apple and Pear Acquisition Scheme be recorded in the Minutes."

In supporting the resolution Mr. M. G. Basey said that Mr. Searcy took over the work under great difficulties, and carried out his duties in a most efficient manner.

On behalf of the selling side of the industry, Mr. L. G. Heading stated that Mr. Searcy had been fearless and untiring, and always fair in his decisions, and the merchants appreciated his efforts.

The resolution was carried unanimously.

Mr. Searcy thanked members for their expressions of appreciation.

SUBSCRIPTION PAYMENTS RECEIVED.

Owing to increased postage rates and in order to conserve stationery, the management has decided not to send out receipts for subscription payments received in future, but to acknowledge the receipt of same each month in the journal. Date shown in parentheses indicates the month to which the subscription is paid. The co-operation of readers in this matter will be appreciated. — (Ed., "F.W.")

Set out hereunder is list of subscription payments received from December 10, 1941, to March 2, 1942. Payments received after that date will be acknowledged next month:—

G. H. Sprague (June, 1942), F. Iredell (December, 1941), W. E. Shepard (September, 1941), W. G. Strachan (September, 1942), L. Borley (February, 1942), Producers' Co-operative Distributing Society Ltd. (June, 1942), D. Feiglin (November, 1942), A. Kaploun (November, 1942), W. W. Pounsett (June, 1942), C. E. Dimstone (June, 1942), A. E. Brisbane (December, 1941), A. Blizard (December, 1942), C. D. Ross (June, 1942), L. Hoddell (December, 1942), R. E. S. Woodward (June, 1942), Major H. Dakin (June, 1942), A. E. Jaques (June, 1942), A. A. Dobson (November, 1942), E. J. Rule (October, 1942), Walter Benham and Sons (June, 1942), Wholesalers Limited (January, 1943), D. H. Sleeth (June, 1942), D. J. Corboy (November, 1942), B. S. Smith (November, 1942).

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Dried Fruit Notes

Currant Investigations

IN NON-IRRIGATED DISTRICTS, 1932-1941.

A SERIES OF INVESTIGATIONS on the cropping and quality production of the Zante Currant has this year been brought to a close. The work had been carried out by officers of this Department in collaboration with the staff of the Commonwealth Viticultural Research Station, at Merbein, and growers' district committees under the aegis of the Dried Fruits Board of South Australia. Thus writes Mr. H. K. Kemp, B.Agr.Sc., Horticultural Research Officer, Sth. Aust. Dept. of Agric. in the Departmental Journal.

Four centres were selected as representative of the non-irrigated vine districts of the State, viz., McLaren Vale, the Adelaide Plains, Barossa Valley, and Clare, and in each centre experiments were set up covering the following matter:—

1. The renovation of old vines losing quality and cropping through debility.
2. Methods of Vine pruning.
3. Crop tests, preparatory to the establishment of manurial trials.

In the earlier years of the tests, considerable study was made of the shoot, bunch, and berry growth relationships. This work has been already completed and the results have been studied and presented from the Merbein Viticultural Research Station.

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Summary.

The variability of the vines used in these experiments has, in many instances, prevented the final proof of finer points. It is quite clear that the chief factor in determining Currant vine cropping and fruit quality in the non-irrigated districts of this State is undoubtedly that of season, and in many years this is sufficient to over-ride and obscure all other cultural factors. However, the following points may be established from this work:—

1. The reconstruction and rejuvenation of old vineyards may be undertaken with confidence. A light crop can be expected in the second season and a full crop in the third, or, at the most, fourth season, after beheading the vines. Over a period of from five to seven years, including the first season of no crop, the reconstructed vines can be expected to out-yield the old vines, and the vineyard will stand in full production, virtually a new block, at the commencement of its period of greatest production. Under 10 per cent. loss of vines may be expected from this operation, and with care and preparation, a far smaller loss should be experienced.

2. **Spur pruning appears preferable** to rod and spur pruning, particularly under the conditions pertaining in the northern districts of S. Australia, with great rainfall variability, and in the areas of Currant production marginal through low rainfall. In areas of greater rainfall reliability as in the southern districts of this State, and possibly in favored spots in the northern districts, there seems to be little advantage in spur pruning, however, as compared with rod and spur pruning.

3. Disbudding of spur-pruned vines does not appear to be justified, except possibly as a means to be applied occasionally to clean up troublesome weak growth from the vine framework. The necessity for frequent disbudding points rather to faulty pruning.

4. Of the four blocks crop tested, only one proved sufficiently even for establishment of a manurial trial, and in this case no benefit in crop production could be proved as a result of nitrogenous manuring, although distinct benefit in vine growth resulted. It is probable that a more sensitive test would

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Canned Fruits News and Notes

THE DRYING OF POTATOES AND ONIONS.

Some Notes on the Economics of this Procedure.

The advantages of dehydrated foodstuffs in war time are primarily the improvement in keeping qualities and the saving in weight and space occupied in transporting the product. A further very important factor at the present time is the saving in tinplate by the use of dehydrated rather than canned fruits and vegetables. From the nutritional aspects, however, the relative proportions of fresh, canned and dried foodstuffs which should be included in the diet will depend upon their respective food values.

The foregoing is stated in the "Food Preservation Quarterly" of the Council for Scientific and Industrial Research. Continuing, the C.S.I.R. writes:—

As there has been no large scale commercial production of air-dried vegetables in Australia to date no information is available from commercial practice, but estimates suggest that from raw Potatoes at £5 per ton, dried sliced Potato could be prepared on a large scale for 1/3 per lb. f.o.b., packed in four-gallon tins, and from Onions at £12 per ton, dried Onion rings at about 2/6 per lb. packed. The following table shows a comparison between the costs, weights, tin-plate used to secure the equivalent of one ton of fresh unpeeled Potatoes and Onions in, say Malaya or Darwin, reckoning freight and handling costs at £8 per ton and allowing for wastage of 20 per cent. shipping and storing the fresh vegetables in the tropics.

	Fresh.	Canned.	Dried.
Quantity	1¼ tons	92 doz. 30 oz. cans @ 8/-	340 lb. net @ 1/3
Weight packed . .	1¼ tons	1 ton	420 lb.
Shipping space . .	50 cu. ft.	50 cu. ft.	25 cu. ft.
Cost f.o.b.	£6.25	£37	£21
Freight, etc. . . .	£10	£10	£5
Cost delivered . .	£16.25	£47	£26
Tinplate used . . .	Nil	360 lb.	Nil to 90 lb.

Notes: (i) Costs based on Potatoes at £5 per ton.
(ii) Fresh Potatoes shipped in bags (extra costs and space necessary if crated).
(iii) Dried Potatoes can be packed in tins or in sisalkraft lined cases.

Onions at £12 per ton.

Equivalent of 1 ton unpeeled at the Kitchen.

	Fresh.	Canned.	Dried.
Quantity	1¼ tons	110 doz. cans @ 8/-	185 lb. net @ 2/6
Weight packed . .	1¼ tons	1.2	220 lb.
Shipping space . .	50 cu. ft.	60 cu. ft.	12 cu. ft.
Cost f.o.b.	£15	£44	£23
Freight, etc. . . .	£10	£12	£2
Cost delivered . .	£25	£56	£25
Tinplate used . . .	Nil	460 lb.	Nil to 50 lb.

Note: It must be emphasised that these figures are estimates only, but are believed to be reasonably close to what could be obtained in large scale commercial operation.

Goulburn Valley (Vic.) News and Notes

(By Our Special Correspondent.)

DURING the month of February we had a welcome break in the weather, with over two inches of rain, which was of enormous value to the late Peach crop after the long dry hot spell.

The W.B.C. Pear crop is just completed harvesting, and turned out better than expected, after the severe windstorm in January.

There was sufficient for all canning requirements, and the balance of the crop was put into the Apple and Pear Board, with very little waste fruit.

The Phillips, Goodman, and Golden Queen Peaches are now ready for harvesting, with the Pullars Cling to follow. All varieties are carrying good crops and there is still a busy time ahead for growers until the end of March.

The canneries are working at full pressure, including Sundays and overtime, and are meeting many difficulties owing to acute shortage of efficient labor, especially women workers for cutting and pitting the fruit.

Most of the college boys have now returned to their respective schools after doing a good job of national importance. They enjoyed their work in the orchards and their services and fine spirit were much appreciated by their employers.

Internees have been released from camps by arrangement with the Defence Department to take the place of the boys, and are satisfactorily engaged picking fruit.

They have been provided with accommodation at Ardmona and Shepparton East, in the camps provided for the boys, and good reports are to hand regarding the manner in which they have settled down to work, after so many months of inactivity.

Tomato Acquisition Difficulties.

Conditions in this district following the freezing of Tomatoes by the Commonwealth Government was investigated recently by Mr. J. M. Ward (Superintendant of Horticulture), Mr. Gloster, representing the Prices Commission, Messrs. Jamieson (Brooks Lemos), J. Turnbull (Rosella Preserving Co.), and Mr. Warne (Transport Board), assisted materially by Mr. J. G. B. McDonald, M.L.A.

Although Shepparton factories are being well supplied, lack of cases and suitable transport have created difficulties for Melbourne manufacturers and growers particularly. These matters were discussed in conference with the Executive of the Tomato Growers' Association, but no finality was reached.

It was pointed out that despite Government proclamation factories were not paying 3/9 per case, the general rate of 2/3 still prevailing.

The main reason for this position is that very little canning quality is at present offering.

The open market price of 8/- per case, it transpires, has been fixed for the time Tomatoes may be unfrozen and available to the public, but in the meantime no trading is permissable.

A satisfactory decision by State officials and the Prices Commissioner is expected at an early date.

Young Farmers.

Annual Meeting at Shepparton East.

A feature of the annual meeting of the Shepparton East Young Farmers' Club, held on February 28, was the fact that the children have a nursery in which 600 Peach trees have been budded over to Pullars and Golden Queen varieties and will be ready for sale this season.

Before the election of officers for 1942 was held, Max Swainton, the retiring President, thanked the members for their loyal support during 1941, and said he hoped 1942 would be even more successful.

The following officers were elected:—President, Max Swainton (re-elected); Vice-President, Harry Cook; Secretary and Treasurer, Rosemary Preston; Press Reporter, Isobel Clayton.

M. Freckleton reported that the sum of £3/1/- was raised from the bottle drive in 1941.

The Peach nursery at our school is looking particularly well. We will have over 200 trees budded to the Pullar Cling variety for sale this season.

We have just completed the budding of 400 stocks to the Golden Queen variety.

:: :: ::

Pilot-Officer V. E. Mills, of Shepparton East, who is attached to the Deniliquin Camp, has been promoted to the rank of Flying-Officer, the promotion to take effect from last December. Flying-Officer Mills was formerly the popular Secretary of the Sheppatron Fruit Growers' Association, and a member of the Executive of the Northern Victorian Fruit Growers' Association.

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show crop benefit from nitrogen in good seasons, but such benefit must be expected to be masked in seasons of low rainfall, heavy mould, or other unfavorable environmental conditions.

The thanks of the Department must be extended to the growers who have made available their properties for the conduct of these experiments and for their assistance and the assistance of their garden staffs during the course of the work. These experiments have been long continued and have exacted much time and attention, which has in all cases been cordially and enthusiastically extended.

W.A. DRIED FRUITS BOARD.

At the January meeting of the W. Aust. Dried Fruits Board there were present Messrs. H. S. Bickford (Chairman), L. W. Ham, G. McD. Edgecombe, G. E. Stone and J. Duff, Jr.

The W.A. pack for 1942 was estimated at 2,500 tons for Currants, 250 tons Sultanas, and 150 tons Lexias.

The growers' contribution for 1942 was fixed at 4/3 per ton net packed weight.

Business dealt with included registration of packing sheds, registered dealers' returns, etc.

S. AUST. DRIED FRUITS BOARD.

Dried Tree Fruits Needed for Fighting Forces :: Restriction of Plantings of Dried Vine Fruits :: Labor Problems.

AT the meeting of the S. Aust. Dried Fruits Board held at Adelaide on February 16, the Chairman (Mr. G. A. W. Pope) announced that a meeting of the Consultative Committee had been arranged for February 26 and 27, and he required direction in certain matters. The most important of them was the Board's annual publicity grant and it was agreed that the necessity for rigid economy should be stressed on the grounds of the limited cash reserves of the Board as well as the uncertainty of the harvesting of the 1942 season's pack. It should also be noted that it was probable no dried tree fruits would be available for civil consumption, further, that the normal requirements for Currants, Sultanas, and Lexias would be increased under the pressure of military requirements.

The Secretary (Mr. W. N. Twiss) submitted other matters which would appear on the agenda for the Consultative Committee, and these were discussed at length.

In regard to the Commonwealth Joint Committee on Rural Industries now in Adelaide taking evidence, a letter of the Director of Agriculture (Mr. W. J. Spafford) was dealt with inviting the Board to tender evidence. The Secretary reported that Mr. Spafford had agreed to submit to the Committee evidence in support of the restriction of further plantings of areas for the production of dried vine fruit, as well as the matter of the acute shortage of labor required for deliveries of firewood for irrigation plants.

A request supported by questionnaire of the Adelaide Chamber of Commerce in respect to the reorganisation of industries to meet war needs was considered and it was agreed to cooperate as far as possible and practicable with the Chamber in reply to its questionnaire.

Reports by Department of Commerce Inspectors on the grading of 1942 season's dried tree fruits at Coonawarra, and on the conditions of packing houses in the Barossa and McLaren Vale areas were received.

DRYING VEGETABLES AND FRUIT.

The importance of dehydrating vegetables is stressed by Mr. A. S. Glen, who recently returned to Australia from California. He states that modern dehydration has no harmful effect on the food value of the vegetables. All that was necessary to bring back their color and flavor was plain water. Samples he had mailed to Britain recently had proved this.

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New South Wales

Murrumbidgee Irrigation Areas

EXCELLENT CANNING PEACH CROPS — EMBARGO ON FRUIT COMING INTO THE M.I.A. — LEETON CANNERY BUSY WITH FRUIT AND VEGETABLES — TOMATO CROP CONTROLLED — HUGE VEGETABLE GROWING CONTRACTS — THE ALIEN PROBLEM.

(By Our Correspondent.)

Seasonal Conditions: For the past few weeks the weather on the Area has been mild. Some useful rain has fallen and, although not welcomed by the Sultana and Prune growers, has considerably helped to bring good size up in the Apples and canning Peaches. Some damage was caused to early maturing Grapes through cracking.

Canning Peach Crop: Excellent crops of canning Peaches are showing and the fruit is sizing up well. However, the picking will be later than usual. This is only in keeping with other fruits this season, most varieties being from one to two weeks later than normally.

Embargo on Introduction of Fruit: The special general meeting of the Leeton Fruitgrowers' Society held at Leeton recently, to discuss the memorandum issued by the Department of Agriculture regarding the advisability or otherwise, of relaxing the embargo upon fruit into the M.I.A., in order to permit the introduction of certain tropical and other fruits, passed a resolution in favor of continuing the embargo.

It is interesting to note in this respect, that the Leeton Fruit Inspectors have been busy. Forty dozen Bananas done up in boxes and a case of Bananas in a cart standing outside the Hotel Yanco, cost William O'Brien, of Narandera, a ten pound fine at Leeton police court when he was charged with bringing fruit into the Area. On another charge of having Bananas and Pineapples in his possession at Leeton on October 24, 1941, O'Brien was also fined £20. It was stated the defendant had previously been fined for a similar offence.

Leeton Cannery Busy: In order to complete a big rush order by the military authorities, some members of the Leeton Cannery worked all around the clock, starting on Tuesday morning at 7.30 and finishing Wednesday at 7.30 a.m.

Mr. A. G. Grant, works manager, said that as soon as the urgency of the order was realised there was no lack of volunteers coming forward prepared to keep on working all through the night as well as the day in order to get it ready, and it showed a very good spirit of cooperation on the part of the cannery employees. Boxes had to be made for the goods and the work of packing and labelling went on throughout the night.

Enemy Aliens at Griffith: Many more enemy aliens have been sent away from Griffith for internment. The local police force has been considerably strengthened.

The police have directed the attention of all enemy aliens, that is, unnaturalised Italians, Germans, and Japanese, to report at least once a week at the nearest police station and produce their certificates.

Tomato Crop Under Control: Mr. Beasley, the Minister for Supply, announced recently that it had been found necessary to issue an order under the National Security Act, requiring that the whole of the tomatoes produced on the M.I.A. be delivered to canners and food processers only.

Under the regulations, except with the consent of the Secretary of the Department of Supply and Development, a grower of tomatoes shall not sell, distribute, supply, deliver or otherwise dispose of tomatoes to any person, other than to a canner with whom he usually deals or to the canner nearest to the grower, or to the canner whom the Secretary shall from time to time direct. A canner shall not reject any Tomatoes delivered—tendered or consigned to him by a grower without the consent (proof whereof shall lie upon the canner) of the Secretary or any authorised officer of the Department of Agriculture of the State of Victoria or of the State of New South Wales.

Federal Government's Drive for Vegetables: For many years the Murrumbidgee Irrigation Area, comprising Griffith, Yenda, Leeton and Yanco districts, has had many stalwarts ready to prove that the Area had wonderful facilities for producing in very large quantities, almost any type of foodstuff, and the Area has proved, of course, its great capacity for producing fruits, rice, fat lambs, in great abundance.

Moderate quantities of fresh vegetables have also been produced for many years, but the Murrumbidgee Irrigation Area has now received a direct challenge in the form of a requisition for tremendous quantities of vegetables for use under a scheme prepared by the Federal Government, and details of which were announced by the Honorable Minister for Supply and Development recently.

The demands now made on our famous irrigation area are such as could not be contemplated in ordinary times, but the task given to us is a national task to provide very necessary essential foodstuffs for the use of the nation at home and abroad, and it becomes the duty of every resident on the M.I.A. to find ways and means of meet-

ing this tremendous demand for fresh vegetables.

The Leeton Co-operative Cannery Ltd. has been commissioned by the Supply Department, to arrange for the necessary vegetables for canning and dehydrating, and for distribution as fresh food wherever required by the authorities, and the fruitgrowers' own co-operative societies on the Area have undertaken to sign up certain definite acreages under the scheme.

The selection of the Murrumbidgee Irrigation Area as the main source of supplying such huge quantities of fresh vegetables, is a recognition that the irrigation scheme, and the settlers, can provide these very necessary foodstuffs, and it would be unthinkable for the area to fall short of official expectations when such a great opportunity has been presented to settlers.

Truly a challenge has been thrown out to the Murrumbidgee Irrigation Area to "deliver the goods" and the three big growers' societies have been busy signing up growers anxious to prove that we will provide a full answer to the challenge.

NEW SOUTH WALES.

Crop Reports :: Pome Fruits :: Citrus :: Bananas :: Rain Badly Needed.

In a report received early in February from the N.S.W. Dept. of Agriculture, the following is stated:

Pome Fruit:

Unfavorable weather has been experienced throughout all growing districts. The lack of sufficient moisture has affected development and small sized fruit predominates. Generally speaking, trees are carrying light crops and at this stage it appears that the State's production will fall short of average. An improvement in the later varieties could be expected in many instances should substantial rains occur at an early date.

Bananas.

Dry hot conditions prevailed during the greater part of January, although scattered rain occurred towards the close of the month. The effects of the continued droughty weather is apparent in fruit being harvested. Much poor quality fruit, resulting in considerable wastage, is to be seen, although young plants in well-protected localities are producing fairly good bunches.

Citrus.

In the Wyong district some orchards on flats and a few irrigated places look well and should carry good crops. Trees on hillsides, however, are wilting, but are still holding on to their light to medium crops. Good soaking rains are needed badly. The excessive heat experienced is said to have killed most of the white wax and a big percentage of the purple scale.

Fairly satisfactory crops are to be seen on citrus trees in irrigated orchards around Windsor. The severe droughty conditions, however, have adversely affected trees in unirrigated groves and very little fruit is expected from these.

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THE MARKET GROWER

HUGH VEGETABLE GROWING CONTRACT.

Murrumbidgee Irrigation Areas Centre of Activity.

BIG SCALE PRODUCTION of vegetables in Australia by farmers under contract is proposed under a scheme to reorganise the vegetable growing industry introduced by the Department of Supply and Development.

The scheme, details of which were announced by the Minister for Supply (Mr. Beasley), is to meet exceptionally heavy demands for fresh canned, and dehydrated vegetables, and to overcome the present difficulty in getting supplies for the defence forces.

More than 8,000 tons of vegetables are expected to be produced from this year's planting in the Murrumbidgee Irrigation Area.

These will comprise Carrots (2,600 tons), Beetroot (1,260 tons), Cabbage (2,000 tons), Silver Beet (1,000 tons), Parsnips (1,100 tons), Swede Turnips (300 tons), and White Turnips (100 tons).

Instructions have been issued to the Leeton Co-operative Cannery to process to the full capacity as many tomatoes, green peas, French beans, leeks and orach (silver beet) available in the district. Large quantities of potatoes and onions will be canned or dehydrated, and pumpkins, marrows and cauliflowers, and other such vegetables, will be handled when available.

Isolated contracts had been made in selected areas in Victoria, but the Murrumbidgee Irrigation Area (N.S.W.) had been selected for large-scale production.

The Murrumbidgee Area was ideally situated, and had a large efficient canning industry. The drying of vegetables could also be undertaken. In the districts concerned three co-operative societies would help to organise the growers, distribute seeds produced by the experimental farm at Leeton, distribute fertilizers, and allot co[illegible]acts.

The Leeton Co-[illegible] Cannery, a growers' [illegible] is fostering the scheme [illegible] sent the cannery is p[illegible] millions of tins of fruit, [illegible]ables, and other products for [illegible] fighting forces. It has large cold storage capacity, which will be used to carry over vegetables past their normal growing period for distribution to the various camps.

VEGETABLE GROWING IN VICTORIA.

Werribee District Likely.

Werribee is likely to be the chief area selected initially in Victoria for the large-scale vegetable production on farms

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being sponsored by the Federal Government.

The system of growing vegetables on farms, however, will be extended widely to many other areas wherever rich soil and an assured supply of water is available throughout the year.

NEW TOMATO VETOMOLD.

"A Triumph of Plant Breeding."

By W. F. Bewley, Experimental and Research Station, Cheshunt (England).

VARYING RESISTANCE of different varieties of tomato to attack by Cladosporium fulvum, the leaf-mould fungus, has long been established on commercial nurseries. For instance, every grower knows that the Sunrise types—Ailsa Craig, E.S.I., etc., suffer more severely when attacked than the Comet types, among which the now popular Potentate is included.

The search for immune varieties was started by scientists over fifteen years ago, with the ultimate object of breeding good resistant commercial types.

In U.S.A., Canada and Denmark, the Red Currant Tomato Lycopersicon pimpinellifolium was used as the resistant parent.

In 1939 the Ontario Department of Agriculture announced the introduction of a new leaf-mould resisting variety, named Vetomold, which had been developed by Dr. A. N. Langford as a comparative project between the Departments of Botany and Biology of the University of Toronto and the Ontario Horticultural Experiment Station, Vineland.

Seeds of Vetomold were first sent to the Cheshunt Research Station by Dr. C. J. Robb, of Vineland, in July, 1939. They were distributed for trial to a few selected growers in 1940, and the reports received at the end of the season were most promising. At one nursery the results were quite outstanding. One house was planted with Vetomold, the remainder with ordinary commercial varieties. Vetomold remained clean and healthy until the plants were removed in November. The crop was heavy and the fruit excellent in shape and quality.

Vetomold is a hybrid of the Red Currant Tomato, Lycopersicon pimpinellofolium and Potentate of the strain grown at the Cheshunt Research Station. In habit it resembles Potentate fairly closely. The leaves are spaced a little further apart, and while they are drooping in habit, they spread a little more than in Potentate. They are also slightly larger, darker, more shiny and tougher. Trusses of fruit may either be single or double, bearing on an average seven fruits each. The fruit is large, fleshy, and slightly flat to round, containing two, three or more "cells." The calyx is small, the sepals being incurved towards the stalk.

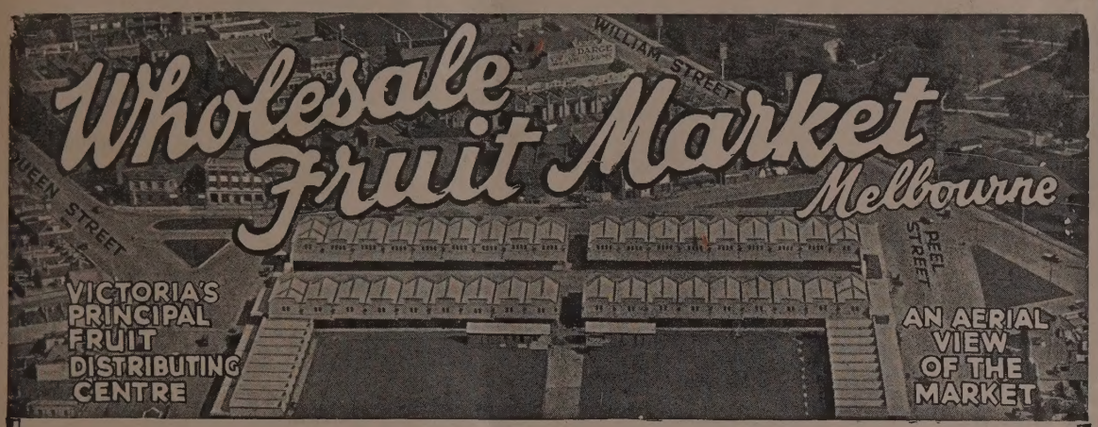
Vetomold is definitely more robust than Potentate and does not show the same tendency to weaken after the fifth truss. The mid and late season fruit is often superior in quality to that of the first four trusses.

Various trials suggest that Vetomold is immune to attack by Cladosporium fulvum.

In our opinion it is a triumph in plant breeding, and is well worthy of trial on any nursery where leafmould is serious, especially as a late or second crop. Congratulations are extended to Dr. Langford and his colleagues.—"Hort. Advertiser" (Eng.).

After some earthquake shocks a married couple sent their little boy to a relative who lived at some distance.

A few days later, the parents received this telegram: "Am returning your boy. Send earthquake."



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Market Notes and Prices

NEW SOUTH WALES.

Sydney (25/2/42): The State Marketing Bureau of N.S.W. reports as follows regarding fruit and vegetables on the City Fruit Markets:—

Only limited supplies of dessert Apples were available, the few Jonathans on offer were sold at high prices. Relatively few lots of other varieties were obtainable. Prior to closing some Tasmanian Worcester Pearmains were received, and sales were effected at from 15/- to 20/- per bushel. Cooking Apples were plentiful, particularly Granny Smiths, and rates for this variety eased sharply.

Very satisfactory demand ruled for Williams Pears, local and interstate supplies selling well. Prices showed little change at up to 14/- per bushel.

Receivals of coastal and Irrigation Area main crop Valencias were light throughout the period; demand early was somewhat quiet, but prior to closing improvement was noticeable and values firmed. Coastal packs sold to 24/-, and some selected Irrigation Area fruits realised 25/- per bushel. Second crop Valencias and Navels were available, and lots of reasonably good quality met a steady inquiry.

Fairly good supplies of Grapes were forward. Choice, large Muscatels sold satisfactorily, but difficulty was experienced in clearing low grade lines. Waltham Cross and Gordos were received from the Murrumbidgee Irrigation Areas, while a few Cornichons came to hand. Queensland Gros Colman, Black Muscatels and a few white varieties were also available.

The bulk of Peach supplies were from inland growing districts, and included many lines of "J. H. Hale."

The market for Peaches generally was steady. Victorian consignments forward showed considerable over maturity, and some lines had to be sold at low prices.

Consignments of Pineapples were heavy, receivals on Monday, February 23, approximating 5,500 cases. Inquiry was only moderate, and, apart from a few selected brands, values were lower. Fruit showing blister sold cheaply.

The high rates ruling for Bananas at opening were not maintained owing mainly to the larger quantity available and the somewhat indifferent quality of much fruit affected by heavy rains. The closing market had a tendency to firm.

Current prices are:—

Apples: Jonathan (N.S.W.), fancy grade, 20/- to 28/-; Granny Smith cooking, 10/- to 12/-; Delicious, fancy, 12/- to 15/-; Twenty Ounce, fancy, 10/- to 12/- per case.

Pears: Williams (interstate), 9/6 to 14/-; (N.S.W.), 10/- to 14/- per case.

Peaches: 5/- to 10/-, few higher, per half-case; Victorian, yellow, 8/- to 12/-, inferior lower, per bushel case. **Plums:** 3/- to 8/-, few higher. **Nectarines:** 4/- to 12/- per half-case.

Bananas: Nines and eights, 20/- to 22/-; sevens, 16/- to 19/-; sixes, 12/- to 15/-, few specials in each grade higher, inferior lower.

Pineapples: 5/- to 9/-.

Rock Melons: Local, 4/- to 7/-, few higher; Irrigation Area, 9/- to 13/- per tropical case.

Oranges: Valencia, coastal, standard grade, 16/- to 22/-, few higher; Irrigation Area, 17/- to 24/-, few specials dearer; second crop, 6/- to 16/-, few higher. **Lemons:** Coastal, 12/- to 24/-. **Grapefruit:** Inland, 15/- to 30/- per case.

Quinces: 6/- to 12/- per case. **Water Melons:** 4/- to 20/-, few specials higher, per dozen. **Grapes:** Black Muscat, 4/- to 12/-, extra choice dearer; other black varieties, 4/- to 7/-; White Muscat (local), 9/- to 15/-, extra choice higher; other white varieties, 5/- to 7/-. **Passionfruit:** Choice, 10/- to 13/-; other, 4/- to 8/- per half-case.

VICTORIA.

Melbourne (3/3/42).

Fruit: Apples, eating, 9/- to 15/-, cooking, 5/- to 8/-; **Figs,** 6/- to 8/- half-case; **Grapes,** 7/- to 16/-; **Oranges,** Navel, 12/- to 22/-; **Lemons,** 12/- to 18/-; **Grapefruit,** 12/- to 26/-; **Strawberries,** 12/- to 15/- doz. punnets; **Nectarines,** 12/- to 20/-; **Peaches,** 7/- to 15/-, few to 20/-; **Pears,** dessert, 5/- to 10/-; **Papaws,** 12/- to 16/- double case; **Plums,** 6/- to 12/-; **Quinces,** 6/- to 7/-; **Bananas,** Q'land (green), 6's 14/- to 18/-, 7's 18/- to 22/-, 8's and 9's 22/- to 25/- double case; **Pineapples,** 7/- to 10/- double case; **Passionfruit,** 6/- to 12/- half-case; **Cantaloupes,** 5/- to 10/-.

SOUTH AUSTRALIA.

Adelaide (2/3/42): S.A. Fruitgrowers' and Market Gardeners' Association Inc. report as follows:—

Steady trading was experienced, with most lines having a firm demand. Lettuce was in very short supply, and sold in some instances at higher rates than quoted below. Bananas were easier, otherwise fruit quotes were unaltered. The undermentioned quotes are for f.a.q., cases extra except where stated.

Fruit: Oranges, Valencia, 22/-. **Lemons,** 18/-, 20/-. **Peaches,** White 10/-, Yellow 9/-. **Plums,** 4/6, 7/- half-case. **Bananas,** 31/-, 33/- crate. **Pineapples,** 12/, 14/- crate. **Melons,** Water, 8/-, 10/- cwt.

Vegetables: Beans (French), 5/- doz. lbs.; Beetroot, 3/- doz.; Cabbages, large 8/-, medium 5/-, small, 4/- doz.; Carrots, 3/- doz. bchs.; Cucumbers, 6/-, 8/- case; Cucumbers, Apple, 1/6, 2/- doz.; Lettuces, 1/6, 2/- doz.; Onions, White, 13/-, 14/- cwt.; Parsnips, 3/- doz. bchs.; Peas, 12/- bushel; Potatoes, 18/-, 19/- cwt.; Rhubarb, 1/6, 2/- doz. lbs.; Tomatoes, firsts 8/- ½ case, seconds 7/-, cases included; Trombones, 8/- cwt.; Turks Head, 8/- cwt.; Turnips, 3/- doz. bchs.; Swede, 3/6, 3/- doz. bchs.; Triambles, 8/- cwt.

N.S.W. CHAMBER OF FRUIT AND VEGETABLE INDUSTRIES.

Limitation of Stencil and Other Services.

The Secretary of the N.S.W. Chamber of Fruit and Vegetable Industries, Mr. P. S. Macdermott, advises that the following decisions were reached at a recent general meeting of members of the Chamber:—

That from the 1st February, 1942, the free service by agents of stencils to growers, etc., be limited to a stencil not exceeding 1/- each in value, and rubber stamps not exceeding 1/6 each in value.

If stencils or rubber stamps of greater value are required by growers, the Chamber is prepared to arrange for the purchase of same provided they are paid for by the grower.

In regard to all printed or colored case labels, these must be supplied by growers.

GROWERS—Consign Your Fruit and Vegetables to Agents who are Members of N.S.W. Chamber of Fruit and Vegetable Industries

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LEND TO DEFEND
BUY WAR SAVINGS CERTIFICATES

The Value of Animal Manures

THEY DESERVE GREATER ATTENTION AT THE PRESENT TIME.

ANIMAL MANURES warrant more careful consideration on orchards, vineyards and farms, owing to the shortage and high prices of artificial fertilizers due to war conditions. So writes Mr. G. K. Baron-Hay, Under Secretary for Agriculture in W.A., in making available the following information from the W.A. Plant Nutrition Branch.

The use of farmyard manure is traditional in British farming practice, and it is highly rated for its manurial and other effects on soil fertility. In W.A., except for market gardens and intense culture, there is seldom any consistent attempt to make best use of the manure which accumulates around stables and cow yards, or even that which is dropped in the paddocks.

Admittedly, the time and labor required for its handling may seem to offset its immediate advantages, but it is a valuable asset in maintaining and improving soil fertility. In present times especially it is worthy of more consideration.

Our temperate climatic conditions remove the need for Winter housing of stock so that the greater part of the manure produced by grazing animals is excreted in the paddocks.

A dairy cow is estimated to produce 12 tons of manure a year (including urine) with a value of approximately £10 on the basis of its principal manurial components. Such an asset deserves attention even when scattered over pasture paddocks and should be spread periodically with pasture harrows before it has become too hard to be easily broken up.

Likewise, at intervals depending on the amount available, manure from stables and cowyards should be carted out and spread systematically in the paddocks. Dumping in small heaps in the paddocks is a wasteful practice.

Areas of poorer soils might be especially treated in this way, **for animal manures have soil improving properties beyond their contents of nitrogen, phosphoric acid and potash.**

Stable Manure for Orchards.

On the other hand, stable manure might be reserved for the orchard and garden portions of the farm, where its nitrogen and potash may be of special value in view of the serious shortages of sulphate of ammonia and the usual potash fertilizers.

On this point it should be remembered that most of the nitrogen and potash excreted by animals is in the urine. Manure from stables which has absorbed this urine may be expected, if properly handled, to be much richer in nitrogen and potash than droppings gathered from paddocks and yards.

Dairy farmers might also consider making greater use of the sweepings and washings from their bails and yards by a system for the distribution of these as liquid manure. On many New Zealand dairy farms such liquid manure is collected in tanks or sumps and systematically spread on the pastures from a tank spreader designed for the purpose. The improvement in the pastures has justified the effort.

Poultry Manure Valuable.

Poultry manure is also a valuable organic manure which usually contains two to three times as much nitrogen, phosphoric acid and potash as good stable manure. Like all animal manures, its composition varies considerably according to the way the manure is handled, the age of the animal, and the type of food it receives.

Fowl manure in the Perth metropolitan area usually contains a considerable proportion of sand, some of which is picked up by the birds in feeding and some is scraped up in collecting the manure. An idea of its composition and variation may be gained from the analyses of two samples collected recently in the metropolitan area (a) from a commercial poultry run, and (b) from a householder's backyard pen. The analyses after air drying were:—Nitrogen (N) (a) 2.76 per cent. (b) 0.85 per cent.; phosphoric acid (P205) (a) 2.28 per cent. (b) 1.08 per cent.; potash (K20) (a) 0.93 per cent. (b) 0.69 per cent.; ash (mostly sand) (a) 48.9 per cent. (b) 64.1 per cent. The addition of one part of superphosphate to 3 or 4 parts of fowl manure would make for a better balanced general manure.

FEEDING AND HOUSING OF PIGS.

Need for Improvement.

Reporting recently to the Chief of the Division of Animal Industry of the N.S.W. Department of Agriculture, the District Veterinary Officer on the North Coast drew attention to the fact that most of the pigs in that area were fed chiefly on maize and skim milk, and green feed or grazing was seldom provided. The lack of a well-balanced nutritious diet caused much loss among young pigs. It was regarded as unfortunate that wheat was not more largely fed to pigs on the North Coast, particularly in view of the wheat position in this country. The District Veterinary Officer also condemned the practice of feeding putrefying food to pigs.

The insanitary conditions under which pigs were housed on some farms on the North Coast was the subject of further comment by this officer. Fortunately, there had been no serious outbreaks of infectious disease during the past year. It is fallacious, however, to argue, as some farmers do, that there is no connection between insanitary conditions and disease. Admittedly, it does not necessarily follow that because conditions are insanitary the pigs will be diseased, but it does follow that when disease breaks out on an insanitary holding the results will be more serious. Furthermore, there is much more likelihood of disease breaking out on such a holding than on a well-managed one.

Kidney worm is a case in point. The spread of this parasite is definitely favored by poor conditions on the farm. As a matter of fact, the control of kidney worm in pigs kept under insanitary conditions is next to impossible until a general improvement in the conditions is effected.

Literature on feeding, housing and other aspects of pig raising is obtainable free on application to the Department of Agriculture, Box 36A, G.P.O., Sydney.

"SAY IT WITH ONIONS."

A progressive Canadian canning and dehydrating firm has developed a new line—powdered onions—the product being merchandised in a 5 cent rubberised transparent envelope. Their slogan is "Don't send orchids, send onions."

Powdered carrots and other root vegetables have also been produced in the plant, states the "Canadian Food Packer," but merchandising plans are not yet completed.

RYE FOR PIGS.

The feeding of Rye to pigs formed the subject of an enquiry to the S. Aust. Dept. of Agriculture recently. The reply of Mr. W. S. McAuliffe, Pig Husbandry Adviser in the Department's Journal, stated that the chemical composition of rye grain was very similar to wheat, and could be expected to equal wheat in feeding value. However, the results of feeding trials when rye was the only grain used have varied greatly. In some cases, the results had almost equalled wheat, but in many others, only poor results had been obtained.

Good results could always be expected if rye was fed in conjunction with wheat or barley at the rate of 1 part to 2 parts wheat or barley, preferably 1 part of each of the three grains. If rye is to be fed as the only grain ration, it should be used in conjunction with plenty of greenfeed. The best time to feed it would be while good grazing was available.

Rye fed alone was unpalatable and was also liable to cause digestive troubles and for this reason should not be fed to very young pigs. Like all other grains, it required a supplementary ration high in protein to procure a correct feeding balance.

BEST BACONERS.

Popular Breeds.

Pure bred Berkshires, Tamworths and Large Whites, and crosses of these breeds, appear to be the most favored for bacon production.

This information was recently collected from bacon factories throughout N.S.W. by Mr. A. F. Gray, Chief Piggery Instructor of the Department of Agriculture in that State. It is pointed out, however, that there is a wide range of choice on the part of pig raisers, and in every district there are some breeders who favor other breeds and crosses.

SORE THROAT GARGLE.

An efficient gargle can be made by mixing 1 ounce permanganate of potash (condys crystals) in 1 pint water. It is not offensive to the taste and will generally soothe a sore throat.

— SPECIAL NOTICE TO FRUITGROWERS —

In response to numerous requests from growers for information as to who are members of the WHOLESALE FRUIT MERCHANTS' ASSOCIATION OF VICTORIA, the following list is given. All are members of the above Association, and are registered firms carrying on business in the WHOLESALE FRUIT MARKET, MELBOURNE. (All Members under Fidelity Bond)

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REGAN & KENNY (Successors to Wm. Sweeney) (33).

Correspondence is invited by the Association.

Office: 21 Wholesale Fruit Market, Queen St., Melbourne. Phone: F 4866.

Tasmanian News and Notes

APPLE AND PEAR CROP GENERALLY CLEAN AND SATISFACTORY — SHIPMENTS TO MAINLAND — INCREASED DRYING AND CANNING FACILITIES — LABOUR AND TRANSPORT PROBLEMS — IMPORTANCE OF GREEN MANURE CROPS — THE WAXING OF APPLES.

(By Our Correspondent.)

THERE have been good rains in the northern districts and the fruit is growing well and is a good clean crop on the average, and should pan out quite up to normal by the end of the season.

Picking has begun and fruit is being shipped to Sydney, so far the shipments comprise W.P.M. chiefly. The growers protested against a 2¼ size being debarred, and I believe succeeded in getting them included.

I hear that **two drying factories** will operate in the Tamar Valley this year, which should provide an outlet for a lot of fruit. I should think that a lot of Cox's Orange Pippin would be required from the northern districts for the Melbourne market, there is no better flavored Apple at that time of year, and they were well received on previous occasions.

The season in the southern districts has continued dry and windy since early December, with light showers at times and local thunder storms, and most orchards are now beginning to show the effect of insufficient moisture, though growth of the fruit has been good to date.

Picking has begun for both the local and interstate markets. Gravensteins are in keen demand and W.P.M. and Alfristons are going on to the market.

The crop is generally clean, black spot being confined to the damper gullies and semi-neglected orchards, though earlier it seemed probable that there would be considerable damage from this disease. Codling moth is still rather troublesome in spite of spraying, bandaging and picking infected fruit. Red spider and canary fly are not giving much trouble to date.

The factories are making preparations to put up a record pack, and no doubt will have started operations before your next issue.

The labor question becomes more acute as the seasonal demands increase and it will be most difficult to deliver large quantities of fruit on time.

Transport, both local and interstate, is causing some anxiety; in many of the coast areas the lorry services have been cut out and we are told we must forward fruit per steamer, but as most growers have no means of carting the fruit from sheds to the jetties, and many jetties being out of repair, the problem is serious.

Many growers have sown or are sowing **green manure crops**, and where this practice is systematically carried out the results fully justify the expense and trouble as the land becomes easier to cultivate and holds the moisture better.

I understand that **waxing Apples** as a means of prolonging their life has passed the experimental stage and is being undertaken this season on a commercial scale. It appears to be more satisfactory with some varieties than others.

Small-fruit picking is finished and I hear the total tonnage was very satisfactory.

Hop picking is now commencing and will require a lot of hands at the same period that labor is required on the orchards and in the packing sheds.

Vegetables of all sorts seem very scarce and are likely to remain so, as the shortage of manures will affect the supply as well as scarcity of labor and dry weather.

How the few land workers left on the land are going to feed the community, I do not know, as the pinch is only just beginning.

I notice in the February "Fruit World" that all States are protesting against the fourpenny unit to be paid by acquisition this year as it is insufficient to meet production costs which have risen since last year.

Wages and salaries throughout the Commonwealth have been raised considerably since the outbreak of war, but the primary producer is in many instances receiving less. This will have serious reactions and may ultimately lead to permanent short supply of essentials as the drift to the cities is being accentuated to an alarming extent.

Later: The Federal Government has announced that the 6d. unit will be paid this season.

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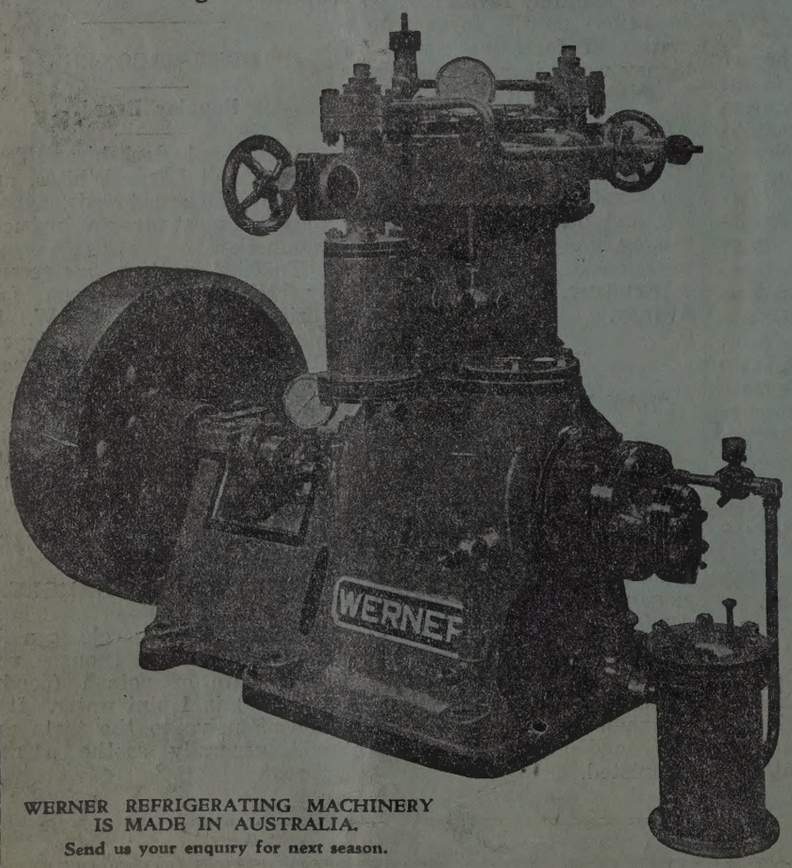

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SOLE AGENTS—

West. Aust.: Atkins (W.A.) Ltd., 894 Hay St., Perth.
South Aust.: W. J. White, 56 Franklin St., Adelaide.
Tasmania: Noyes Bros., Hobart and Launceston.
N.S.W.: Stuart Walker & Co. Pty. Ltd., 174 Clarence Street, Sydney.
Q'land: Garoche Pty. Ltd., Wooloongabba, Brisbane.

THE PRICE OF LIBERTY.

"A people may prefer a free Government; but if, from indolence, or carelessness, or cowardice, or want of public spirit, they are unequal to the exertions necessary for preserving it; if they will not fight for it when directly attacked; if they can be deluded by the artifices used to cheat them out of it; if, by momentary discouragement, or temporary panic, or a fit of enthusiasm for an individual, they can be induced to lay their liberties at the feet even of a great man, or trust him with powers which enable him to subvert their institutions —in all these cases they are more or less unfit for liberty; and though it may be for their good to have had it even for a short time, they are unlikely long to enjoy it."—John Stuart Mill.

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